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ABSTRACT

Innovative solutions in training or retraining of health workers to meet the nationwide primary care deficiency are summarized. Programs described concern nurse clinicians, practitioners, and midwives; physicians' assistants; medical assistants, laboratory technicians, and secretaries; dental assistants, hygienists, and laboratory technicians; community health aides; and mental health workers. New patterns of health care delivery such as group practice and health centers are assessed for their impact on health workers, the public, and health occupations education. Obstacles to further participation of non-physician workers in primary care are lack of money for training programs, conservatism or opposition by professional organizations and educational institutions, licensure laws, and the lack of a general structure of health care delivery. Appendixes tabulate active and planned programs for registered nurses and physicians' assistants and community health aide programs. A ten-page supplement identifies existing programs and licensing in Ohio and makes recommendations. A 170-item bibliography is included. (MS)

THE CONTRIBUTION OF NON-PHYSICIAN HEALTH WORKERS TO THE DELIVERY OF PRIMARY CARE

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A Report Prepared for

The Health Manpower Committee

of the Ohio Comprehensive Health Planning Council

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THE CONTRIBUTION OF NON-PHYSICIAN HEALTH WORKERS TO THE DELIVERY OF PRIMARY CARE

Congressional committees (136), the American Medical Association (6), and spokesmen for academic medicine (135, 46) and labor (118) agree that there is a serious deficiency in the delivery of primary care in the United States. There is less agreement on the exact definition of "primary care", and there is sharp disagreement on what steps should be taken to remedy this deficiency. Popular proposals include more or different doctors, more group practice, and, simply, more money. While experts continue to debate, a remarkable series of innovators scattered across the country are adopting the pragmatic solution of training new workers or retraining existing workers to help physicians deliver primary care. The purpose of this report is to summarize this rapid and widespread development and to examine its implications for health workers, the public, and educational institutions.

Primary Care

To physicians, primary care is what general practitioners, internists, and pediatricians spend most of their time doing, and it is largely ambulatory care. To the patient, it is having access to someone who will treat his everyday ailments and treat or direct him to treatment for more complex disorders. John Fry, an English general practitioner who has carefully analyzed his work, estimates that he can manage unaided 94 per cent of the problems presented to him (72). The American family physician, who differs from his English colleague mainly in that he has hospital privileges, makes about 80 per cent of his patient contacts in the office or at home and refers

only 5 per cent of the patients he sees (120). The term "secondary care" is applied by White to consultant and diagnostic services, and "tertiary care" to superspecialty services (144). Although these categories are not altogether clear-cut, they will serve for present purposes. This report, therefore, will not examine the non-physician personnel who are also being trained to work with hospital-based specialists in highly technical capacities. New kinds of workers who are being trained for dentistry, obstetrics, and mental health are certainly related to primary care, so new developments in these fields will be considered briefly. But the main emphasis will be on those who are beginning to share directly in the work of delivering primary care.

"The integrative functions of the general clinician", as defined by Pellegrino, form a good starting point for an operational definition of primary care. He distinguishes 4 functions: 1) assuming primary responsibility for primary assessment of the needs of unselected patients; 2) deciding which to treat and which to refer; 3) designing and coordinating a plan of management; and 4) providing continuing care and support (105). A finer subdivision into 8 functions will be useful in analyzing what tasks new kinds of health workers can do:

1. Intake

Traditionally, this step consists of a simple registration of patients as they come into the clinic or office. More recently, however, the introduction of new instruments and new kinds of workers has made it possible to extend this step into processes of outreach, case-finding, or routine multiphasic screening for latent disease.

2. Information collection

This is the point at which the physician usually begins: the medical history, physical examination, and standard laboratory studies. Technicians have already taken over much of the laboratory work, and some of the new workers to be discussed are undertaking part or all of this process.

3. Making the primary diagnosis

This is sometimes said to be the one element of primary care which belongs exclusively to the physician. Yet many nurses in isolated work situations certainly make routine diagnoses, and the programs which train nurses or physicians' assistants to recognize common conditions are definitely teaching diagnosis at an elementary level. Most programs stress that the trainees must learn the limits of their knowledge and know when to ask for help.

4. Referral or consultation

Taking action to obtain more specialized diagnostic or treatment skills outside the primary care setting is the link between primary and secondary or tertiary care. Although, as we have noticed, only 5 per cent of the problems presented to the primary physician need to be referred, this is the narrow gate through which most patients pass who fill the beds in university medical centers where physicians are trained.

5. Establishing a treatment plan

This step is often hurried over and may not even be recognized. A short-circuit can become established between sore throats and antibiotics, like the one between recurrent tonsillitis and tonsillectomy which has not yet been entirely removed from medical practice. Here, in the choice between

therapies and the recognition of alternatives, dangers, and the importance of timing, is the greatest need for a physician's skill and training and, unfortunately, often his greatest deficiency (96). The introduction of new health manpower can perhaps be justified best by the fact that it can free the physician to become better informed and more judicious about the plan of treatment. Several programs emphasize retraining the physician to work with new personnel. Unfortunately, this usually means teaching him what to give up to others - but it rarely includes what he is to do with his new-found time.

6. Giving treatment

This is another function which is passing increasingly out of the hands of the physician. Most medicines are dispensed by pharmacists in the United States today. Nurses give injections more frequently, and physicians' assistants are being trained in direct contact treatment, such as suturing lacerations. In the large segment of treatment which consists of talking and listening, nurse practitioners are proving to be very useful, although psychotherapy, like the selection of treatment, is a function that the physician himself could develop more strongly if he had more help.

7. Continued observation and care

Like intake, this is a part of primary care which has often been perfunctory in the past but which could logically be developed by new health workers. Care is a function central to theoretical descriptions of nursing (1). The increasing prominence of chronic illness suggests that this function is a logical one for nurses to emphasize. Although pediatric care has been the first area in which nurse practitioners have been trained, the care

of the elderly and the chronically ill also seems appropriate since, like well-baby care, it tends to be a function physicians often fail to find time for. Adequate care of such patients also calls for a knowledge of and ability to coordinate complex community health services which physicians seldom possess, but which is already part of the knowledge and skill of such workers as the public health nurse.

8. Health maintenance

Modern medical education does not equip a doctor to teach mental and physical hygiene. Physicians have generally found that they could spare little time from treating the sick to instruct the healthy, beyond maintaining an immunization schedule. At present, this function seems to rate a low priority, but, like intake, which also mediates between health and sickness, it is a particularly appropriate activity for lay counsellors and community health aides.

This brief survey of the work of primary care indicates that part or all of every task is being or might be performed by workers less highly trained than physicians. It also suggests some trends which have led to our present deficiency in primary care.

Increase in specialization and the use of hospitals, longer and more complex courses of training in settings remote from the site of most primary care, and increasing numbers and proportions of allied health workers, mainly in technical, hospital-based services, all leading to fragmented services, are some of these trends. Economic changes, population movements, and generally rising social expectations have also contributed to the down-grading and neglect of primary care.

Whatever the pathogenesis of the disorder, the symptoms are being felt keenly. At the very moment when many are expressing fears that medicine is about to become frozen in a governmental mold, an almost spontaneous and widespread change is taking place in such apparently unrelated places as departments of medicine and pediatrics, city and state health departments, neighborhood health centers, group practices, and - most remarkably, in physicians' private offices. A small but rapidly growing group of courageous medical educators, nurses, and public health nurses, impatient with the glacial processes of social and institutional reform, have been taking matters into their own hands. Starting with existing but often unrecognized physician-helpers such as the corpsman and the office nurse, they have put together simple programs to enlarge and support their clinical skills and given them appropriate recognition as important agents of primary care. The multiplicity of programs which has developed in only 5 years and the various titles of their graduates--nurse practitioners, physicians' assistants, health associates, health aides, and more--seem highly confusing until one recognizes the simple common purpose: to help physicians deliver more and better primary care, which most citizens of the United States know they need. Something like the early stages of a revolution in medical practice is taking place before our eyes: the redistribution of the work of primary health care.

The New Programs

New training programs can be categorized according to the source of recruits: some use retraining to expand the roles of workers who are already engaged in delivering health services; others train workers who are new to

the civilian health work force. The authors have made an effort to collect and digest the available written material in this very active field through 1970 and have made personal visits to 21 training programs from Massachusetts to California. Basic information about active programs is tabulated in the Appendix, supplemented by references. The criterion for inclusion has been the probability that graduates of a given program will engage in primary care. Terminology in this field is confusing. Terms will be defined as they are introduced, but usage is not uniform in the various programs.

In this section, the new programs will be described. Subsequent sections will deal with new patterns of health care delivery and with evaluation of the programs as they affect health workers, the public, and health education.

1. Retraining of Existing Health Personnel

In the opinion of many physicians and nurses, the obvious person for a physician to turn to when he needs help is a nurse. This traditional view is reinforced by some practical considerations. Nurses form the largest category of health workers. There are twice as many registered nurses in the United States as there are doctors, and almost as many practical nurses (137). Nurses are established, accepted, licensed, and occupationally mobile. In addition, although nursing education is in a state of painful transition from highly fragmented training programs to a more orderly sequence of "education in institutions of learning within the general system of education" (13), it has experienced teachers and educational and clinical facilities which would be potentially valuable resources if they could be mobilized

to meet the need for primary care. At present, most nurses work in hospitals, and only 8 per cent are employed in physicians' offices (14).

A lively effort has developed in nursing during the past decade to break away from institutionalized roles and return to caring for patients. Rigid patterns of nursing practice have in part been related to physicians' attitudes (29), but they have also been accepted by many nurses because of a "system of values that has rewarded nurses in administrative, supervisory, and teaching positions with higher status and financial compensation than nurses in clinical practice" (36).

a. Nurse Clinicians

In collegiate schools of nursing, this movement toward patient care has produced the nurse clinician. In most schools, the term means a baccalaureate nurse who has gone on to a master's degree, usually in a field closely related to a medical specialty. The movement has been documented by Esther Lucille Brown (36). The motive for this new kind of training is the nurse's desire to "get back to the bedside". The education of the nurse clinician provides her with skills and knowledge which will enable her to function more independently to meet the nursing needs of patients. In the hospital, traditional departmental and specialty organization is not well adapted to make the best use of these new experts. One nursing school (Case Western Reserve) is undertaking to solve this problem through joint educational and patient care responsibility.

In pediatrics and psychiatry, and, potentially, in public health nursing, some nurse clinicians are moving out of the sheltering institution and into neighborhood clinics where they participate in the delivery of primary care. A masters degree program at Ohio State University School of Nursing, for example, trains nurses to provide counselling and psychotherapy in several kinds of ambulatory urban settings (126). In relation to primary care, a basic difficulty with many present nurse clinician programs is that they provide only limited opportunities for students to learn to work as colleagues with physicians. New programs at Wayne State and Yale are making special efforts to achieve joint preparation of nursing and medical students (61). Because of the fact that only 216 per cent of employed nurses have graduate degrees, and only 15 per cent of these are working in primary care settings (14), the contribution of nurse clinicians to primary care will probably be more as teachers and as role models than as full-time deliverers of care.

b. Nurse Practitioners

Definition

"Nurse practitioner" is the term most frequently used to describe a registered nurse, employed in the care of ambulatory patients, who has been given special training to enable her to assume a more direct and responsible role in primary care under a physician's direction (4). Examples of the tasks which nurse practitioners perform are well-baby care and the routine care of stable, chronically ill patients.

Development

The point of departure for this development is the common observation that, although nurses have for years worked in clinics and doctor's offices, they have often spent their time in clerical, receptionist, or managerial tasks which do not call for the skills they have been taught (18). Pediatricians, individually and through the American Academy of Pediatrics, took the initiative in setting up such programs. The earliest nurse practitioner programs were developed in Denver (131), Cincinnati (71), Charlestown, Massachusetts (18) and Rochester, New York (42). Meanwhile, obstetricians, gynecologists, and internists have been following the pediatricians' example by surveying their memberships to determine whether physicians in these fields wish to encourage similar developments (148, 81, 119).

A temporary setback to the development of nurse practitioner programs occurred in February 1970, when the trustees of the American Medican Association approved a plan for nurses to become a "new type of health professional, working in the employ and under the supervision of a physician" (12). This plan, unfortunately, was adopted without consultation with the nursing organizations. As a result, a Council of the National League for Nursing adopted a resolution in March which challenged the right of physicians to determine nurses' roles (102). Since this confrontation, representatives of the American Academy of Pediatrics and the American Nurses' Association have met to discuss proposed guidelines for nurse practitioner training programs, and agreement and joint action is hoped for early in 1971. The differences between the two professional groups do not seem to be fundamental. As the dean of one nursing school put it, "It is clear that the professional nurse

must accept larger and more significant responsibilities in the future if the health needs of the people are to be met" (95).

Training Programs

To a limited extent, the nurse practitioner movement is a formal acknowledgment of existing practice. Registered nurses are employed in two-thirds or more of the offices in which pediatricians, obstetricians, gynecologists, and internists work, and in most clinics which deliver primary care. The present programs are intended to redirect the efforts of these existing health workers into more appropriate activities, rather than to add to the manpower pool. Hopes that inactive nurses can be lured back to work have not so far been fulfilled, and the programs have, in fact, made a point of accepting only nurses who are already working in a primary care setting.

These programs are 3 or 4 months in length. They consist of highly practical classroom exercises alternating with supervised practice in offices, clinics, or hospital wards. The Denver program is focused on the medical center, while those in Charlestown, Cincinnati, and Rochester put more emphasis on preceptorial training, either with the student's actual employer, or with a substitute practitioner or clinic.

What a Nurse Practitioner Does

Nurse practitioners are taught skills which, though not new to nursing, take on new significance because of the purpose for which they are used. The practitioner approaches a medical history as a "systematic search for new materials that refute or corroborate alternative explanations of the patient's status". This problem-solving goal differentiates

it from the "more socially oriented, patient-directed nursing history" (17). Another skill which is stressed is medical assessment. The pediatric nurse practitioner is expected to be able to evaluate an apparently well baby, identify abnormalities, and make a judgment about whether to refer the patient to a physician. For this purpose, she is taught and encouraged to use everyday tools of pediatric practice, such as the otoscope and stethoscope. In terms of the outline of primary care, the nurse is led to give up inappropriate clerical and "hostess" functions in order to be more active in information collection, making the primary diagnosis, and referral or consultation. She also maintains or increases her traditional part in giving treatment, continued observation and care, and health maintenance.

Professional Identity

The essential educational goal, which makes a special program necessary, is that the nurse is taught to play a "more direct and responsible role". Other terms used to suggest the change which is sought are: "comprehensive and independent", "extended role", and "extended scope". If the nurse is to learn to function differently, she must be given some exposure to a different work situation in which the physicians and others she works with can encourage her to assume more responsibility than usual. She is taught to work with the doctor rather than for him. The idea of teamwork is symbolized by the fact that the programs usually have joint medical and nursing directors and that physicians do much of the teaching, both didactic and preceptorial. Much of the effort in the nurse practitioner training programs is specifically directed at giving the nurse new

confidence in her clinical skills and in orienting the physician with whom she will work so that he will make it possible for her to exercise them.

Financial and Institutional Support

Limits have been set to the number and productivity of these programs by lack of institutional and financial support (151). Sixteen active programs which are described in published sources are identified in the Appendix, with somewhat over 200 graduates. This list is undoubtedly incomplete, since 23 active and 43 planned programs have been reported in pediatrics alone (122). More than half the programs are limited to training nurse practitioners for local purposes which are specially funded. For example, the course at Presbyterian St. Luke's in Chicago was set up for nurses who work in the Mile Square Health Center, which is funded to provide care to indigent residents, by the Office of Economic Opportunity (125). Others have been sponsored by public and private hospitals, medical schools, medical centers, and one school of public health. Schools of nursing have so far not accepted these programs, although one is included in the continuing education division of a school of nursing. All have found financing difficult and have had to piece together resources from private, local, state, and federal sources. At least one program has turned to charging tuition ($800 for a locally employed nurse, $2,000 for a out-of-town nurse, for 16 weeks) when federal funds and a foundation grant expired. This step, of course, limits the number of applicants sharply.

Nurse practitioner programs have made a vigorous start. They will need to achieve the support of nursing education and some degree of reliable public

financing before they can produce many graduates. With such support, however, they offer the possibility of rapidly increasing the capacity of a large established group of professional health workers to deliver primary care.

c. Nurse-Midwives

Nurse-midwives are a special category of nurses who form the backbone of obstetrical services in most countries of the world but who are so scarce in the United States that they do not rate separate listing in the most recent report on national health manpower (106). Their numbers are, in fact increasing rapidly, although there were only 837 registered in 1967. There are 10 schools of nurse-midwifery in the United States. The nurse-midwife must be distinguished from lay midwives, of whom there are reported to be 4,700 in this country, mostly in poor rural and mountain areas. "The nurse-midwife is a registered nurse who, by virtue of added knowledge and skill gained through an organized program of study and clinical experience recognized by the American College of Nurse-Midwifery, has extended the limits (legal limits in jurisdictions where they obtain) of her practice into the area of management of care of mothers and babies throughout the maternity cycle so long as progress meets criteria accepted as normal" (37). This careful definition is necessitated by the fact that state licensing laws restrict or prevent the practice of midwifery. Most nurse-midwives, therefore, participate in pre- and post-natal care but do not deliver babies. A special title, "Nurse Obstetric Assistants" has been introduced in order to distinguish these nurses from poorly trained lay midwives.

Nurse-midwives have practiced for thirty years in the Kentucky Frontier Nursing Service. Although most deliveries are now performed by physicians

in hospitals there as elsewhere in the United States, nurse-midwives continue to carry an important part of the obstetrical load. They have proved their value as mediators of contraception and family planning (31, 32). The frontier nurses have done much more than midwifery. In essence, they have provided primary care to poor mountain people in eastern Kentucky. As a result, maternal and infant mortality rates in the counties they serve are markedly lower than in surrounding counties. This program alone has proved for many years that nurses with additional training can be effective agents of primary care in a rural area (33, 2).

An important demonstration conducted in Madera County, California, in 1961-62 showed that nurse-midwives could be used successfully to provide obstetrical and maternity care for a rural population in the United States. In spite of this demonstration, physicians and other staff members remained uneasy about accepting them, and subsequent efforts to modify state law to permit them to practice under medical supervision have been unsuccessful (26).

The evidence available at this point suggests that in the field of obstetrics nurses can move soon into roles comparable to those of the nurse practitioners being trained for pediatrics, but that there may continue to be resistance to nurses taking full responsibility for normal deliveries. Some leading physicians in the field of obstetrics, however, believe that the time is ripe for a vigorous development. Dr. Allan Barnes of Johns Hopkins says, "under all circumstances the wise and efficient utilization of midwives will help meet the problems

arising from shortages of medical manpower. This, indeed, must be our solution" (27).

2. Training of New Workers

A salient fact in the field of primary care is that many, if not all the physicians who are responsible for delivering it have heavy work loads and need help. To the harassed practitioner, eventual relief through the building of new medical schools or the gradual retraining of nurses seems very far away. Casting about for more available sources of assistance, many physicians recalled experiences with military corpsmen and discovered that 30,000 such men are being discharged annually, of whom about 6,000 have had experience providing primary care. Most of these men could find civilian work only as orderlies (100). Some of the most original and controversial new health manpower programs are those which have been established to take advantage of this occupational dead-end.

a. Physicians' Assistants

Definition

The term "physician's assistant" will be used to designate an experienced military corpsman or other non-nurse who has been technically trained to give a physician direct assistance in all phases of his work. The programs whose graduates participate in primary care are described in Part II of the Appendix. Others which train assistants for specialists are not listed.

Development

The first such program was developed in 1965 by Dr. Eugene Stead at Duke University for the straightforward purpose of relieving hard-pressed internists and general practitioners who were too busy to return to the medical center for continuing education (133). This type of assistant, designated Type A by Estes, is qualified to exercise "judgment and integrative ability" and, when necessary, to function relatively independently (65). Subsequently, the Duke program has also undertaken to train assistants to work with hospital-based specialists and subspecialists (83). Some programs which have developed elsewhere, such as the one at the Cleveland Clinic (45), train only the latter type of assistant. Estes designates such assistants Type B and sees them as characterized by a more limited area of knowledge and skill but by greater depth within this area. Type C assistants, according to Estes, are similar to Type A, in that they work closely with primary care physicians, but less flexible, since they have less formal training and thus less breadth and depth of knowledge. The example he gives of this type is the "Medex," trained at the University of Washington (132).

Training Programs

The courses are more varied than those which train nurse practitioners. Most are 2 years long, but the range is 1 to 4 years. One has been designed as a 4-year baccalaureate program (98), and the original program at Duke, which lasts for 2 years, will probably offer students the option of extending this to 4 years and obtaining a baccalaureate degree. Several physician's assistant programs began by admitting only men who had both training and

experience as medical corpsmen in military service, but there has been a shift toward broader entrance requirements. The new program at Alderson-Broaddus College, West Virginia, requires only a high school diploma, while the new Child Health Associate program in Denver requires 2 years of college and has admitted a class composed almost entirely of women.

Curricula also cover a wide range. The Seattle Medex program gives highly specific training based on task analysis of the needs of practicing physicians and pre-examination of the candidates to determine what they already know. This program depends heavily on preceptorships with physicians who have been carefully matched with the students they train and ultimately employ. The programs at Denver and Duke, on the other hand, are based in medical centers; they give more didactic training designed with reference to academic credits; and they assign field work in clinics and other institutions as well as with individual practitioners.

What a Physician's Assistant Does

Differences among these developing programs have been emphasized (65, 122), but surveys of practicing physicians indicate that those with whom the graduates will work do not at present distinguish between types of assistants (119). Careful inspection of the kinds of primary care tasks physicians' assistants and nurse practitioners will be best equipped to perform, however, does reveal some differences. Like nurse practitioners, they are trained to collect information and to make preliminary diagnoses, deciding which cases to refer to the physician and which they can cope with themselves. Both types of health worker are also prepared to assist the

physician with routine continued observation and care. The physician's assistant, however, is usually more extensively instructed in the technical aspects of primary care, such as obtaining biological samples, operating diagnostic instruments, suturing, cast removal, and the like. He is taught to make rounds with and sometimes for the physician in the hospital homes and nursing homes. In this respect, the training of the assistant to the primary care physician is like that of the assistant who will work in the hospital with specialists in places such as renal dialysis or coronary care units. The nurse practitioner, on the other hand, receives less technical training. Instead, she is helped to develop her skills in counselling, health maintenance, and social and psychological support.

Professional Identity

Because physicians' assistants are a new type of health worker, they face problems in becoming established. The training programs themselves pay a price for their novelty, since they often find that they are competing for faculty and clinical opportunities with the most favored group, namely, medical students. The placement of graduate physicians' assistants has so far been easy, which indicates how much help physicians need. At least one program, however, considers that the preparation of a "receptive framework" for its graduates justifies devoting much time and effort to giving practicing physicians and the state medical society active roles in the planning and operation of the training program (152). Physicians, nurses, and many others are becoming aware of the new physicians' assistants, and questions have been raised about adding a new occupation to the 60 allied health occupations or specialties which have achieved recognition and which are "currently experi-

encing a remarkable proliferation of sub-specialties, job titles, and formal training opportunities" (106).

Financial and Institutional Support

The spark for developing a physician's assistant program is generally supplied by a bold innovator, but it takes the resources and support of at least one strong organization or institution to make it work. Internists, pediatricians, surgeons, and public health physicians have started programs, and they have been backed by schools of medicine and of allied health professions, by colleges, and by county medical societies and large medical groups, but not by hospitals as such.

Novelty has advantages, as well as disadvantages. A new plan can attract funds which established institutions cannot. The Medex program in Seattle has just received a large grant from the National Center for Health Services Research and Development, which is also supporting the development of similar programs in other states. The Duke, Colorado, and Alderson-Broaddus programs have had major grants from private foundations and voluntary organizations. Like all educational programs, however, these are inevitably deficit operations, and reliable sources of support are not yet visible.

Only about 50 students have graduated from the 12 physician's assistant programs identified in the Appendix, and the Duke program alone plans to expand to a class of 100 in 1971. The total would be larger if the hospital-based specialized assistants were included. Clearly, physician's assistants will be graduated in the next 5 years in numbers comparable to

the numbers of nurse practitioners. Whether they will be competing for the same jobs once the most urgent need has been met remains to be seen.

b. Medical Assistants, Laboratory Technicians, Medical Secretaries, and Secretary-Receptionists

These groups together constitute two-thirds of the allied health workers employed in the offices of internists. Their contribution to the delivery of primary care is indirect and mainly in the phases of intake and information collection. Many patients, however, and many physicians recognize that an experienced office girl, regardless of her training, can and does participate in most phases of the physician's work. Like nurses, these workers are not new to the primary care setting. The reason for including them as "new workers" is that their training has been formalized and accredited just within the past 3 years, replacing the training of the past in vocational and technical schools or, often, on-the-job. Because these programs are new, information about their graduates is very limited (10, 106). These programs, along with many other in fields such as occupational, physical, and inhalation therapy, are to be found in the new junior or community colleges which grant 2-year associate degrees, and in developing colleges of allied health professions. Medical assistants, for example, who have formed a professional organization, the American Association of Medical Assistants, have 3 approved training programs in California (Modesto Junior, Pasadena City, and West Valley Junior Colleges), one in Texas (San Antonio College), and one in Ohio (Cuyahoga Community College). Since these programs are in recognized academic institutions, their graduates hold academic credits which they can use toward advanced

training in the health field. At present, it does not seem likely that any significant number of these workers will go on to more responsible nursing or assistant levels, but since many schools are at least discussing core curricula and career mobility, a reversal of the recent trend toward occupational specialization and compartmentalization is possible. Lack of public financing is the main obstacle at present preventing more extensive training of allied health workers (87).

c. Dental Assistants, Dental Hygienists, and Dental Laboratory Technicians

These are the usual categories of allied health workers specific to the field of dentistry. Like obstetrics and mental health, dentistry is tangential rather than central to primary care, but it deals with such common and widespread health problems that it must be considered at least briefly in a survey of the delivery of primary care.

These workers are found in almost every dentists' office, but information on their numbers and distribution is limited. Assistants and laboratory technicians are not licensed, but may be certified by their respective national organizations. Hygienists are graduates of a 2 year college level program and are licensed in all states (137). From the point of view of the present report, the most important development in dentistry is a move toward more intensive training of auxiliaries to qualify them to assist the dentist directly in all but the most highly technical phases of his work. The practice of "four-handed dentistry" is generally regarded by dental educators as a necessary development to meet increasing demand (58). Since the dental student must also be trained to work effectively with more highly trained

assistants, the Division of Dental Health of the Public Health Service has set up guidelines for "TEAM" training programs (139). Several dental schools are experimenting with this new type of dental assistant (80, 34, 103). An important obstacle to increasing the responsibility of dental auxiliaries is the restrictive nature and interpretation of many existing state licensing laws (51). A liberalized statute was proposed in the 1969-1970 Ohio General Assembly, but defeated.

d. Community Health Aides

These workers are essentially new members of the primary care team. To our knowledge, no general study has been made of their numbers and characteristics. The impetus for developing this kind of health worker has come from such federally funded programs as the neighborhood health centers of the Office of Economic Opportunity (Poverty Program). The pattern for the use of "indigenous" health aides is derived from experience in developing countries and in populations such as the Indians, rather than from the more familiar hospital nurse's aide (60). Aides are persons, usually recruited from the population to be served, who work as agents of an organized clinic or health center. They may have a high school education, but often do not. They may perform one or more of several functions, depending on their background and inservice training. Training programs vary widely, but some steps toward uniformity have been taken (78). From the point of view of health care delivery, the most important new function they perform is "outreach". As cultural or linguistic translators, they are in a better position than any other care provider to extend the intake phase of care. Theoretically, the aide is also concerned with the important but neglected task of preventing

illness, by means of case-finding, follow-up, and health education. One study indicates that community health aides can instruct mothers in the home care of their childrens' respiratory infections as effectively as can doctors or nurses (41). Complicating any effort to evaluate or even to describe their work, however, is the fact that in neighborhood health centers at least, the hiring and training of community health aides is used partly as a means of providing work and social advancement for members of a deprived community. Ironically, these efforts at social change contribute to the image of the neighborhood health center as a place which provides a special kind of health service designed for poor people and hence "second class." The work of the community health aide overlaps with that of the social worker, since health in poor populations, whether urban or rural, is intimately related to the poverty cycle of poor education, unemployment, poor housing and nutrition. The goals of neighborhood health centers include much more than the delivery of primary care (124), and a full discussion of their implications for future health services is beyond the scope of this report. A few of the most experienced programs are identified in Part III of the Appendix. The centers in the Bronx, Cleveland, Chicago, and Los Angeles are noteworthy for innovations in training staff and other functions.

e. Community Mental Health Workers

Community mental health workers are being introduced in many places. A recent survey identified 600 such programs, 200 using volunteers as well as paid workers (53). Professional mental health services have been provided in the past by psychiatrists, clinical psychologists, psychiatric

social workers and psychiatric nurses. The discrepancy between manpower resources and obvious needs is probably greater in this than in any other health field, and most active professional workers agree that they will need the help of many less highly trained persons in order to meet community needs (101, 25). The most urgent problems are those of mental hospital patients, but patients seeking primary care also present a great many emotional problems. McKeown estimates that from 10 to 25 per cent of patients seen by British general practitioners are suffering from some form of psychiatric disorder and that as many as one third of all long-term absence from work is due to what are primarily psychoneurotic conditions (92). Old people and the disabled, in particular, have special social and psychological difficulties which some of the new programs are intended to cope with.

The National Association for Mental Health held a conference in February, 1970, designed to focus attention on mental health manpower. Programs were identified which are training workers at graduate, baccalaureate, associate degree, and high school levels for a remarkable range of tasks, from visiting nursing homes, through counselling at various levels, to the treatment of hospitalized psychotic patients (53). The organizers of the conference concluded that "the important work is just now beginning at the State and local levels" (93). Mental health services are an excellent example of the many social and community services which are lacking in the United States, compared to the industrialized countries of western Europe. Part of the heavy load carried by primary physicians in this country is attributable to their diminishing numbers in the face of rising demand. But another part may be due to the fact that the general practitioner, the internist, and the pediatrician

are required to be all-purpose counsellors and social referral agencies in the absence of well-organized and publicly supported social services. Swedish patients make an average of 2.7 visits to physicians a year, while in the United States the comparable figure is 5.3 visits a year (107). Differences in social services, along with many other factors, contribute to this discrepancy. The training and employment of significant numbers of mid-range health workers in the mental health field would probably relieve pressure on the primary physician and his staff.

New Patterns of Health Care Delivery

New roles imply new relationships among the actors and, in some instances, a new play. The training of nurse practitioners and physicians' assistants often presupposes that the graduate will be working with doctors who practice alone, since this is how primary care has been provided traditionally. The steady growth of group practice, however, the development of organized neighborhood health centers, and the inclusion of incentives for group practice in proposals for national health legislation all suggest that most health workers being trained today will spend their careers in more complex work relationships than those of the simple doctor's office. Certain cities, such as Denver, and certain states, such as California, which are building their public health services into organizations capable of delivering health care, also point the way to more highly organized patterns of medical practice (52, 67). Urban health centers providing comprehensive ambulatory care, with smaller satellite neighborhood health stations, are a likely development in the near future. In rural areas, similar centers supplemented with high speed transportation for scattered populations have been proposed (140) and are

beginning to be developed, for example in Southern Monterey County, California, and Mound Bayou, Mississippi (19, 74).

Institutions and organized health care delivery systems facilitate the redistribution of work and can foster increased use of new types of health workers. Essentially all of the innovative programs referred to in this report have developed in organizational settings, replacing improvised solutions of the problems of health care delivery which individual physicians have beeen using for years. Nationally, a dramatic increase in allied health workers has taken place since 1900, so great that physicians have dropped from a third to 10 per cent of total health manpower in spite of a $2\frac{1}{2}$ times increase in numbers (106). This change has occurred during a period which has also seen a great growth in hospitals and hospitalization. In a hospital, the combined needs of many patients and doctors justify the training and hiring of workers for special tasks which a doctor working alone might do himself or be forced to neglect. The proximity of different kinds of workers in an institution also makes reassignment of responsibilities easier. The probable increase of social institutionalization and organization in the provision of primary care will surely have similar effects. Surveys of practicing physicians show that the use of allied health workers increases as the number of physicians practicing together rises (119, 147). Group practices are among the sources of innovation in training and introducing new health personnel for primary care (79, 54, 57). Hospital outpatient departments provide an environment in which it has been possible to develop nurse-operated clinics for the routine care of chronically ill patients (89, 68, 48).

At a time when individuals are speaking out, with justice, against the inertia and resistance to change which our large institutions present, we must remember that social organizations can also facilitate change, and that this is often why they are formed. Manpower and training programs, though important in themselves, may be more usefully pictured as secondary effects of the fundamental organization of health services. The whole pattern of development of new health workers which is the subject of this study seems to be a response to societal needs and changing work relationships rather than the outcome of educational planning. The ultimate fate of these programs will depend upon many factors, but the most important determinant may well be whether or not our national health care system evolves in patterns which can make effective use of these new workers (145).

The chief potential advantages of large centralized organizations are economies of scale and efficient administration. Major disadvantages are a deadening uniformity and the possibility of control by special interests. It is noteworthy that some of the practical applications of non-physician health personnel are in the direction of decentralization, counter to the concentration of services and influence in hospitals which has been going on in the United States for more than fifty years. The most striking example is the reinforcement of the faltering general practitioner by furnishing him with help. More complex groups and health centers in rural areas actually move the delivery of primary care away from hospitals, but there are many changes involved in the creation of such new centers in addition to the use of new types of personnel. The introduction of new workers by itself cannot realistically be expected to solve the serious

problem of unequal distribution of health services in this country.

Implications for Health Workers

Work satisfaction. One of the principal attractions which the new programs offer to their recruits is the satisfaction which can be obtained from a career devoted to helping people by caring for them with skill. This source of job satisfaction is an important one for physicians (69) and nurses (36). But it is not easy for a new person, or a person assuming unfamiliar responsibilities, to establish satisfying relationships with those he is serving. First, he must gain confidence in his own abilities. The new training courses are designed in part to provide this. The most useful method for establishing professional self-confidence is supervised work providing actual care. Experience alone, however, is not enough. The student must have a chance to take real responsibility and to make his own decisions, especially if he comes from a field like nursing in which he has been used to taking orders from others. This "role change" is a critical part of the education of the nurse practitioners. Similarly, to reinforce the individual in his new position and to legitimate it to the world, physicians' assistants have formed the American Association of Physicians' Assistants (5), although it does not include the graduates of Medex or Child Health Associate programs.

New health careers do furnish new satisfactions. Recent graduates we have interviewed are enjoying their work. The director of one program says, "The nurse practitioner movement is one of the best and most exciting events I have experienced in my years of nursing" (17). A study of role relationships

and career goals of physicians' assistants also finds much work satisfaction but points out that working conditions vary considerably and that ultimate career goals are not clear (35).

The new programs offer new opportunities for career development in the health field. They are part of a major shift in this country from manufacturing to service work as the dominant form of employment (62). The chance for a nurse to undertake more responsibility for patients, or for a returning corpsman or college student to learn to assist the physician in his work are true instances of vertical career mobility. At least one licensed practical nurse has been trained as a physician's assistant, and "office" nurses and school nurses with administrative jobs are switching to taking care of patients, so lateral mobility is also possible. Frozen compartments of health careers may begin to break up under the influence of core curricula, transferrable credits, the influx of new kinds of people, and better opportunities for advancement which characterize many of these new programs.

Financial Rewards. Increased earnings are among the attractions of the new programs. One consideration which has tended to keep men out of nursing and other allied health fields in the past is relatively low pay scales. This has been changing rapidly in recent years, and the development of new kinds of "professional" positions will accelerate this trend and create new opportunities for negotiation. The Duke physician's assistant program states in its Bulletin that "a justifiable starting salary would be in the range of ten thousand dollars a year" (38). Salaries for nurse practitioners may be 20-40 per cent above what the same nurse earned before this training (127).

Educational programs for nurse practitioners, physicians' assistants, and community health aides have so far been supported by public and private money so that cost has not been an obstacle to candidates. Early grants are running out, however, and new programs are held back by lack of new funds. A few are instituting tuition, so the opportunities for new people to enter these fields are certainly not expanding as rapidly as they might if adequate support were available.

Sex. Like most established health occupations, the new training programs tend to attract one sex or the other, but rarely both equally. None of the programs examined in this study excludes either sex, and yet polarization along sex lines is unmistakably present. Sometimes this arises from selection, as in the programs which admit mainly military corpsmen. Many men are interested in technical work and many women in psycho-social functions, but the reverse may also be true. The United States differs from many other developed countries in having a very low proportion of women doctors. Some of these new programs--the nurse practitioner program in particular--offer means for redressing this balance in a limited way.

Physicians' Attitudes. The new assistant or practitioner must work with and be accepted by the physician. Surveys of practicing pediatricians, internists, obstetricians, and general practitioners show that many of these physicians are disposed to accept new assistants but, also, that only a minority actually delegate primary work to such professional colleagues (148, 119, 81, 108, 30). Physicians who are working with the new graduates have favorable attitudes, since most have sought this help, many have

participated in the training, and one avowed objective of most programs is to save the physician's time. On the other hand, in the personal opinions of many who are training the new workers, and of many graduates, the greatest obstacle to the ultimate success of the movement will be reluctance on the part of practicing physicians to share responsibility and, by implication, status and rewards. Real change in work habits as well as attitudes is required of the physician in order to make full use of the potential of these new colleagues. Most programs try to involve the physician actively in the process of change. Physicians are eminently pragmatic, and there is reason to expect that if the new workers can be shown to function effectively, physicians will accept them, with the important reservation that the new work relationships must not require the physician to sacrifice too much of his gratifying sense of personal responsibility for the patient (69).

Nurses' Attitudes. Nurses have reacted to the advent of the new types of health workers in ways ranging from objections by official organizations to enthusiasm on the part of nurses engaged in training. Reports in the October, 1970, issue of RN magazine indicate that most nurses believe that they could function well in prescribing and treating but feel less certain in the area of diagnosis. Those nurses who have worked with physicians' assistants have enjoyed the experience and have not found their initial fears to be realistic. The choices which "nursing" faces are complex. Shall nurses work with, or compete with physicians' assistants? Shall nursing education undertake to train "nurse practitioners"? Does the present movement open up a new clinical career for nurses, or does it cast them back into the role of the physician's handmaiden which they have struggled to escape?

One clear necessity is for physicians and nurses to work out practical agreements in relation to specific programs rather than to continue shouting at each other from the tops of their respective professional towers. The meeting between the American Academy of Pediatrics and the American Nurses' Association is a hopeful first step.

Implications for the Public

The overriding question posed by all this activity is whether the resulting changes will produce more and better primary care, or better distribution of services. Because the changes are both complex and recent, no definitive answer can be given. Some of the early programs have, however, made preliminary evaluations.

The quality of health care can be evaluated by studying the outcome, the process, or the instruments. Outcome, measured by changes in health, is the most meaningful criterion, but one which cannot be applied at the early stages of a complex change such as introducing new health workers. The evaluation which is possible at this point consists of describing aspects of the process of health care delivery such as number of patients seen, redistribution of tasks, feasibility and acceptance. The instruments here are the new workers themselves. They can also be described, though not in final form, but only the roughest estimates can be made of their future numbers and proportionate contribution to health manpower.

Process. Studies of the Denver pediatric nurse practitioners indicate that they can care for 80 per cent of the problems presented by infants and children attending a health station in a low income area (129). In a private

pediatrician's office, the number of patients can be increased by a third when a nurse practitioner is added (123). A comparison of the work of nurse practitioners with that of pediatricians seeing the same patients showed 86 per cent agreement, with significant differences (not necessarily errors by the nurse) in only 2 out of 400 cases (64). Finally, a survey of mothers of pediatric patients found 94 per cent who expressed satisfaction with the nurse practitioner and 57 per cent who considered joint care preferable to solo care (56). Continued monitoring of the early experience with pediatric nurse practitioners has been proposed by the American Academy of Pediatrics (39).

The relatively small numbers of the physicians' assistants who have been trained so far seem to be well accepted by patients. A study of the Duke graduates suggests that middle income patients accept them better than do low or high income patients (113).

Instruments. Critics of the retraining of nurses object that nothing is gained by using types of health workers who are already in short supply. The answer given is that both nurses and physicians have been wasting their skills on tasks which can be satisfactorily performed by less highly trained workers, resulting in an increase in overall efficiency and more jobs at the lower and intermediate levels of training. How much more manpower we really need at the upper levels may not be determinable until we have redistributed the work in order to make more appropriate use of the highly trained workers we already have.

Legal Issues. The introduction of a new type of health worker raises questions about licensure, supervision, and protection of the public. These issues are much less troublesome in relation to nurse practitioners, since medical and nursing practice laws are broad enough in most states to permit nurses to provide primary care under the supervision of a physician. In Ohio, the nursing practice act prohibits only "acts of medical diagnosis or prescription of medical, therapeutic, or corrective medical measures by a nurse (104)."

Many public and professional interests are involved in decisions about licensure. Only a brief summary can be presented here. Detailed studies of the legal issues have been made for the states of North Carolina (63), Minnesota (84), and Hawaii (85), and a recent book reviews medical licensure in the United States (59). These issues must be distinguished from the subject of malpractice, which is also receiving a great deal of current attention. Malpractice law is decisional rather than statutory, and derives from the common law principle that persons will be held liable for damage caused by their own negligence (117). The question of licensure or certification is rarely raised in malpractice suits.

Mandatory licensure has been advocated as a means of protecting the public against incompetence or exploitation. As Hershey has pointed out, however, there is no good evidence that it accomplishes this purpose (82). As new health occupations have developed, they have sought licensure in many states. This fact suggests that the most significant motive for licensure may be to establish and restrict professional status. Licensure of physicians'

assistants has been proposed, and the State of Colorado has actually passed a law providing for the specific licensing of Child Health Associates (43), which has been sharply criticized as too restrictive (55). The American Medical Association and the American Hospital Association have called for a moratorium on new licensing laws until other forms of regulation can be explored and more is known about how new health workers will function (7).

A second approach to regulation is permissive amendment of existing medical practice acts so that they clearly allow physicians to delegate responsibility to trained assistants. Such acts have been passed in Oklahoma, Colorado, Kansas, and Arizona (24).

An extension of the licensure process has been enacted by the California Legislature in order to encourage the use of physicians' assistants (40). This law permits delegation by physicians. In addition, it authorizes the Board of Medical Examiners to certify training programs and approve applications by individual physicians to employ no more than two physician's assistants. The Board is also required to render a detailed report to the legislature in a year.

A practical step which would at least move toward greater uniformity would be to establish certification of training programs at a national level. The American Medical Association and the American Academy of Pediatrics have proposed guidelines for this purpose (111, 4). Certification has been criticized as falling under professional rather than public control.

An essentially new proposal has been put forward by Nathan Hershey, Research Professor of Health Law at the University of Pittsburgh Graduate School of Public Health (82). In place of mandatory licensure of individuals, he suggests that institutions such as hospitals and organizations such as group practices be licensed and given responsibility for assessing the qualifications of personnel whom they employ. Personal licensure would be retained only for independent practitioners. Some theoretical advantages of such a system would be less occupational fragmentation, more flexibility, and more freedom to let a specific task be done by the person best qualified to do it. A disadvantage is that it would increase the concentration of power in the hands of institutions.

Social Needs. The issues of licensing and certification often seems to have more to do with the interests of the providers of care than with those of the general public. The public interest is much broader than regulation of professional workers. The very existence of the programs described in this report indicates broad and deep national need for improved health care delivery. Every program needs continuing financial support. The necessary evaluative research to guide development is also a national need with a sizeable price tag. We seem to be close to a national consensus that good health care is the right of every citizen and that it is the responsibility of government to assure equal and democratic access to the system which provides care. The consensus will probably be expressed in the form of a national health insurance program, possibly during the 92nd Congress. But money will not buy additional service from hard-pressed physicians unless they have some help. One of several measures which will be required in addition to coverage

of medical care costs is the provision of federal funds for the continuation and evaluation of programs directed at improving the delivery of primary care. The demonstration and early development phase has already been completed, and we know that nurse practitioners, physicians' assistants, and community health aides can be recruited and trained and that they can contribute to primary care. What is needed now is sustained support, moderate expansion, and skilled evaluation. The question is not whether such programs will work, but rather how many of which kind of program do we need?

The states also have work to do. Licensure is presently a state function. Creative legislation could use this power to encourage and facilitate more effective health services. Supplementary state financing for program development is vital in the absence of major federal support. Support has been given by Ohio to the Pediatric Nurse Practitioner Program in Cincinnati, and this must be continued and perhaps expanded. States such as California demonstrate that the state public health system can be developed as an effective agent for improving the delivery of primary care to rural and poor populations.

Implications for Health Education

Two strong and somewhat contrary currents can be detected in the programs which are preparing their students to participate in primary care. One consists of breaking away from institutions and classrooms in order to return to apprenticeships in clinics and doctors' offices. This trend minimizes formal academic studies which are not directly relevant to the work to be done and acknowledges experience by granting certificates

rather than degrees. This kind of training stresses the essential collaboration of physician and co-worker and gives the student the opportunity to learn by taking direct responsibility for actual patient care. The learning situation is more personal, more flexible, and often, more enjoyable than classroom work.

The other trend is toward formalizing the training of new personnel and aligning it with established educational patterns. This is a strong trend, since it coincides with increasing formalization of other kinds health education, particularly nursing. The main value of this trend is that it can open up new health careers and improve vertical and lateral career mobility by furnishing graduates with transferrable academic credits and degrees which are widely recognized.

Before accepting that every kind of training in the health field must be given by an adademic institution and be signalized by the awarding of a degree at some standard level, however, we must take note of the fact that the education of health workers was suffering several kinds of turmoil before the training of physicians' assistants began. Doctors and nurses have always had to obtain some of their education in settings and institutions which are not designed primarily for educational purposes. Medical education, over the past 60 years, has come to be centered almost entirely in highly specialized teaching hospitals, with little or no contact with primary care. The public, practicing physicians, and medical educators have disagreed increasingly over the extent to which medical schools should be training family physicians or specialists, and the debate recently came

to a head in the Family Practice Bill (136). The future pattern of medical education is not clear, but more emphasis on personal, family, and comprehensive care seems very likely (44, 46).

Nursing educators, after years of struggling with the exigencies of hospitals, have arrived at a national policy which aims to place the responsibility for all nursing education in academic institutions (13). This move, which echoes what medical education did more than half a century ago, is a belated but necessary step toward rationalizing nursing education, but it has had the incidental effect of putting leading nursing educators out of touch and somewhat out of sympathy with the efforts to develop nurse practitioner programs (95). An interesting parallel to the development of nurse practitioner programs is the history of public health nursing in the United States, which began outside nursing schools in response to an evident need for home nursing care. Simple, highly task-oriented programs under a great variety of charitable and public auspices were organized, a few in the early 19th century, and many after the Civil War. It was not until 1910 that formal nursing education began to include courses in public health nursing (73). With the development of nurse practitioner training programs outside of formal nursing education, we may be witnessing the early stages of a process which will also eventually enrich nursing education as the public health nursing movement has done.

Other occupations related to the provision of medical care accounted for 651,300 workers in 1967, approximately a ten-fold increase since 1900 (106). They have been educated in a bewildering array of programs, which are beginning

to take on a semblance of order with the development of schools of allied health professions and community colleges (10).

Further organization of the education of health workers seem essential, but medical and nursing education give clear warning of the dangers of specialization and compartmentalization which can result from too rigid an academic mold. Core curricula, equivalency examinations, and an honest recognition that some of a doctor's or a nurse's most valuable skills cannot be taught in a classroom could help create a new learning environment. The unmistakable complexity of future medical care adds another educational requirement. All health workers, most particularly doctors and nurses, must be brought into contact with each other as students and given a chance to learn about each other's competence. Much of the waste of professional skill which has lead to the present new programs can be attributed to simple ignorance about what other people can do.

Summary and Conclusions

The movement to introduce new health workers as agents for the delivery of primary care is still in its infancy. Although it faces some serious obstacles and the final scope cannot be predicted, this movement has many promising characteristics which suggest that it will contribute to important changes in health care in the United States.

The work of primary care is being redistributed in an impressive variety of experiments which are being conducted in medical schools, colleges, health departments, hospitals, neighborhood clinics, and physicians' offices. Existing workers, such as nurses, are being trained to take increased responsibility for evaluation and treatment, and new recruits to the civilian health care work force are entering at levels ranging from clerical to that of a colleague of the physician.

These experiments are appropriate responses to a widely felt need for more and better primary care. In simplest terms, they expand the work of the physician. Tasks, all of which were formerly done by the general physician, are being reexamined and reassigned appropriately to less highly trained workers. New or neglected functions, such as outreach, screening, follow-up, and prevention, are being undertaken, in some cases by entirely new types of worker recruited from the population served.

Established health workers tend to view the newcomers with doubt which can be counteracted by careful orientation and direct contact in a work situation. Most lay people accept the new workers well, particularly when they are introduced by the physician. Patients appreciate the value

of increased personal service.

The new movement has the potential of opening up more rewarding careers for the increasing numbers of workers who have been entering the health care field in recent years. Training programs are beginning to admit and attract new recruits in addition to the nurses and medical corpsmen with which many started. Health care is an important part of the national shift of employment from production to service, and the introduction of new career opportunities could offer alternatives to candidates who are now discouraged by dead-end jobs or too few openings in medical schools.

The movement exhibits both a centralizing trend, towards more formal education and institutionalization, and a decentralizing trend, towards preceptorial training and neighborhood clinics. It is difficult to predict which will dominate. Perhaps the advantages of both can be combined.

Obstacles to the extensive participation of non-physician workers in primary care exist but can be removed if the need is great enough. To leaders in the field, the greatest difficulty is lack of money. They point out that the feasibility of this attack on our health care problems has been demonstrated and that we are ready to replicate the present training programs and test them on a much larger scale. Adequate funds for this purpose will probably have to come from the federal government, although states also have an opportunity to give vital support in these critical early stages.

A major obstacle to further development lies in the conservatism or outright opposition of established health professions. Consistently throughout the country, doctors and nurses who are actually working with nurse practitioners and physicians' assistants accept the new trend and often endorse it enthusiastically. Resistance comes from professional organizations and education institutions who see the movement as a threat to professional status and influence or as a degradation of skilled functions. Several approaches to resolving these differences of opinion are available. Joint conferences of professional groups can help everyone learn about the new programs and work out shared tasks and goals. Unilateral policy statements appear to have been more divisive than helpful. Personal experience with the new workers provides the most persuasive evidence, but since it is available to very few, objective evaluation of the limited numbers of existing programs and graduates rates a high priority.

The new workers are entering one of the most complex hierarchies in our society. Their advent raise questions of supervision and public protection in a fundamental way which may be leading to a reconsideration of the whole neglected and possibly outmoded process of state licensure. Such a change would be slow. Meanwhile, existing physician and nurse licensure laws, with minor modification, can be used to protect and encourage further experimentation. Some state legislatures have already passed laws which range from permissive to restrictive, and the effects will be informative. A moratorium on the licensing of new categories of health workers has been proposed in order to allow time for careful study of alternative and better ways of protecting the public and the workers without inhibiting change.

Finally, the greatest restraint on new health workers in primary care will probably prove to be the lack of a general structure of health care delivery which is capable of using them effectively. The introduction of new workers alone will not solve the problem of maldistribution of services, either geographically or economically. The logical result of task analysis and work redistribution will be a health care delivery team working in more complex patterns. Group practice and neighborhood health centers, rather than the solo practice of medicine, will be the models. In the United States we are probably at the threshold of a great reordering of our inadequate health care system. These bold experiments which are being made with redistributing the work of primary care are beginning to provide some of the basic knowledge we need to create a system which will deliver all kinds of care to the people who need it.

APPENDIX

I. PROGRAMS FOR REGISTERED NURSES

A. ACTIVE

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisites	Length and cost of course	No. of Students	Stage of Development
CALIFORNIA							
Berkeley							
Family Health Practitioner (141, 3, 121, 138)	MPH	Jean C. French, D.PH. Constance Roth, Project Coordinator	University of Calif. School Public Health Berkeley, Cal. 94720	PH nurse with Bacc. + 2 yr. in PH	18 mo. free		1st group Fall 1970
Torrance							
Nursing Pediatrist (3, 121, 138)	Cert.	J.W. St. Geme, Jr., M.D.	UCLA School of Med. Harbor General Hosp. 1000 W. Carson St. Torrance, Calif.	RN, BA, or MPH	12 mo. free		1st phase completed 5/69 2nd begins 7/70
COLORADO							
Denver							
Pediatric Nurse Practitioner (55, 56, 64, 70, 128, 129, 131, 143, 3, 121, 138)	Cert.	Mrs. Elva Popiel, RN, MS H.K. Silver, M.D.	University of Colo. Box 2418 Denver, Colo. 80220	BSN from NLN appr. school	16 wk. free	10-12	Operational since 1965
ILLINOIS							
Chicago							
Nurse Associate (88, 109, 110, 125, 3, 121, 138)	Cert.	A.L. Pisani, M.D. I.R. Shannon, RN	Presbyterian-St. Luke's Hospital 1753 Congress Pkwy. Chicago, Ill. 60612	BSN with PHN training Mile Square Employees only	3-4 mo. free	6	

I. PROGRAMS FOR REGISTERED NURSES

A. ACTIVE Cont'

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisites	Length and cost of course	No. of Students	Stage of Development
MAINE							
Portland							
Pediatric Nurse Assoc. (3, 121, 138)	Cert.	G. W. Hallett Jr., M.D.	Maine Medical Center, Portland Maine 04103	RN(Maine Lic.) must work defined position at completion of program	16 wk. free	6	Began 11/3/69
MASSACHUSETTS							
Charlestown							
Pediatric Nurse Assoc. (18, 39, 47, 49, 50, 134, 149, 150, 3, 121, 138)	Cert.	Priscilla Andrews, RN A.Yankauer, M.D. J.P.Connelly, M.D.	Bunker Hill Health Center 73 High Street Charlestown, Mass.	RN employed ambulatory setting	16 wks. $800 part-time $2000 full-time	22	Operational since spring 1966
MISSOURI							
St. Louis							
Pediatric Nurse Assoc. (Pediatric Nurse Practitioner) (3, 121, 138)	Cert.	L. Kahn, M.D.	Washington University School of Medicine 4500 Scott Ave. St. Louis, Mo.63110	RN, BS in nursing or experience in pediatric care	1 yr. free	6	Operational since 9/69
NEW MEXICO							
Estancia							
"Specially Trained Nurse" (11)		Chairmen, Dept. of Community Med. and Epidemiology	Hope Medical Center Estancia, N.M.	RN (office nurse)	6 months		Clinic open 2/10/69

I. PROGRAMS FOR REGISTERED NURSES

A. ACTIVE Cont'

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisites	Length and Cost of Course	No. of Students	Stage of Development
NEW YORK Bronx							
Public Health Nurse Practitioner (138)	MS plan	H. Wise, M.D. Project Director	Dr. Martin Luther King Health Center and the Montefiore Hosp., 3674 Third Ave. Bronx, N.Y. 10456	RN		20	
NEW YORK Bronx							
Nurse Physician Surrogate (Ambulatory Care Nurse) (3, 121, 138)		B.M. Bell, M.D. Director Ambulatory Care Service	Albert Einstein College of Medicine 1300 Morris Park Ave., Bronx, N.Y. 10461	RN	35 hr. wk. 1 yr.	6	Operational 3 yrs.
Rochester							
Pediatric Nurse Practitioner (3, 121, 138)	Cert.	R.A.Hoekelman, M.D. Assoc. Prof. of Pediatrics	Univ. of Rochester 260 Crittenden Blvd. Rochester, N.Y. 14620	RN, knowledge of child development	4 mo. $750	4-7	Operative Phase I
OHIO Cincinnati							
Pediatric Nurse Practitioner (77, 3, 121, 138)	Cert.	D.J. Frank, M.D.	Good Samaritan Hosp. Cinn., Ohio 45220	RN employed pediatric setting, Ohio	16 wks. Part-time Free	10	Operational

I. PROGRAMS FOR REGISTERED NURSES

A. ACTIVE Cont'

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisite	Length and cost of course	No. of Students	Stage of Development
PENNSYLVANIA Philadelphia Ambulatory Pediatric Nurse (3, 121, 138)		E.B. Wilson, M.D.	St. Christopher's Hospital for Child. 2539 Germantown Ave. Philadelphia, Pa. 19133	RN employees only	4 months Free	4 grad 1 enrolled	Operation 1st cours completed
TEXAS San Antonio Pediatric Nurse Practitioner (3, 121, 138)	Cert.	H. H. Johnson, USAF MC	USAF Medical Center Lackland AFB San Antonio, Texas 78236	RN Pediatric on active duty with USAF	6 mo. Free	3	1st. class 9/1/70
VIRGINIA Charlottesville Nurse Clinician (3, 138)	Cert.	R. E. Merrill, M.D.	Univ. of Virginia, Dept. Pediatrics School of Medicine Charlottesville, Va.	RN, pref. with 2-3 yrs exp.	16 wks.	4	1st class completed

I. PROGRAMS FOR REGISTERED NURSES

B. PLANNED OR

INCOMPLETE INFORMATION

Title of Graduate	Director	Institution
CALIFORNIA		
Los Angeles		
Public Health Nurse in Pediatric Care (138)		Los Angeles County Health Department 230 North Broadway Los Angeles, Calif. 90012
COLORADO		
Denver		
School Nurse Practitioner (142)	Nancy Nelson, M.D. Judith Bellaire, RN	University of Colorado Medical Center School Nurse Practitioner Program Box 2418 Denver, Colorado 80220
FLORIDA		
Nurse in Care of Child with long-term illness (138)		University of Florida School of Nursing
GEORGIA		
Atlanta		
Pediatric Nurse Assoc. (121)	J.R. Naverty, M.D.	School of Allied Health Sciences Georgia State University Atlanta, Ga., 30303
IOWA		
Iowa City		
Pediatric Clinical Assoc. (138)		University of Iowa Medical Center Iowa City, Iowa 52240

I. PROGRAMS FOR REGISTERED NURSES

B. PLANNED OR

INCOMPLETE INFORMATION Cont'

Title of Graduate	Director	Institution
KENTUCKY		
Wendover		
Family Nurse Practitioner (22)		Frontier Nursing Service Wendover, Kentucky 41775
MICHIGAN		
Detroit		
Health Nurse Clinician (138)		Wayne State University College of Nursing Detroit, Michigan 48202
NEW YORK		
Bronx		
Triage or Screening Professional (138)	Bertrand Bell, M.D.	Albert Einstein College of Medicine The Bronx, N.Y. 10461
PENNSYLVANIA		
Philadelphia		
Pediatric Nurse (112)	Joyce Federlein	Philadelphia Dept. of Public Health Community Nursing Services 500 South Broad Street Philadelphia, Pa.
Pittsburgh		
Non-Physician Personnel, Nurse	K.D. Rogers, M.D. Mary Mally, MSS Florence Marcus, M.D.	University of Pittsburgh Dept. of Preventive Medicine School of Medicine Pittsburgh, Pa.

Title of Graduate	Director	Institution
WASHINGTON		
Seattle		
Pediatric Nurse Assoc. (121, 138)	A. B. Bergman, M.D. Patricia Petterson, RN	University of Washington School of Medicine Dept. of Pediatrics Seattle, Washington 98115

II. PHYSICIAN'S ASSISTANT PROGRAMS

A. ACTIVE

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisites	Length & cost of course	No. of Students	Stage of Development
CALIFORNIA							
San Jose							
Pediatrician's Assistant (121)	Cert. AA	Jos. F. Donovan, M.D.	Santa Clara County Medical Society, San Jose, California	Returned Corpsmen and others	2 yr	15	Fall, 1969
COLORADO							
Denver							
Child Health Associate (9, 130, 131, 3, 8, 121, 138)	Bacc. and Cert.	H. K. Silver, M.D.	Univ. of Colorado School of Medicine Medical Center 4200 East 9th Denver, Colorado	2 yr. college	3 yr $450 res.	18	1st class finish 1972
GEORGIA							
Atlanta							
Pediatric Assistant (3, 138)	AA SCI	J. R. Haverty, M.D.	Georgia State Univ. School of Allied Health Services	entrance requirements from Georgia State	6-7 academic quarters	10-15	Sept. 1970
KENTUCKY							
Lexington							
Clinical Associate (8, 138)	Cert.	Joseph Hamburg, M.D.	Univ. of Kentucky School of Allied Health Professions Lexington, Ky. 40506		2 yr.	1	Operational 1969

II. PHYSICIAN'S ASSISTANT PROGRAMS

A. ACTIVE Cont'

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisites	Length and cost of course	No. of Students	Stage of Development
MISSOURI							
Springfield							
Physician's Assistant General, Medical, Surgical, Psychiatric (8, 121, 138)	Cert.	R. Brutsche, M.D.	Federal Health Service, Div. of Health Services, Prisons, Springfield, Mo.	Returning military corpsmen	1 yr.	25	Introduced 1930
NEW YORK							
Brooklyn							
Medical Services Associate (8, 121, 138)	Academic credit	Arnold Lewis, M.D.	Brooklyn Hosp. at Brooklyn-Cumberland Medical Center 121 DeKalb Brooklyn, N. Y.	H.S. diploma	2 yr.		Operational 1970
NORTH CAROLINA							
Durham							
Physician's Assistant (38, 63, 66, 113, 114, 116, 3, 8, 121, 138)	Cert./ 2 yr. Bacc./	Robert Howard, M.D.	Dept. of Community Health Services, Duke University Medical Center, Durham, N.C.	H.S. + 3 yrs. experience in health care	24 mo.	55, 29 grad	Operational 1965

II. PHYSICIAN'S ASSISTANT PROGRAMS

A. ACTIVE Cont'

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisites	Length and cost of course	No. of Students	Stage of Development
NORTH CAROLINA							
Winston-Salem							
Physician's Assistants (15, 16, 3, 8, 121, 138)	Cert. 2 yr. coll. Bacc. 3 yr. coll.	L. Powers, M.D.	Div. of Allied Health Programs Bowman-Gray School of Med. of Wake Forest University Winston-Salem, N.C.	2 yr. college or medical corpsman or 3 yrs. college	24 mo. in 3 phases		Operational 1969
TEXAS							
Galveston							
Clinical Associate (3, 8, 138)	2 yr. Assoc. 4 yr. BS	R. N. Ewer, M.D.	Medical Branch Univ. of Texas Galveston, Texas	H.S. minimum Prev. hosp. experience + prior medical training in military or equivalent	2 yr.	2-4	Operational 1969
WASHINGTON							
Seattle							
Medex (28, 94, 3, 8, 121, 138)	Cert.	R. A. Smith, M.D.	Univ. of Washington and Washington State Medical Education and Research Found. Seattle, Wash.	Independent or equivalent Corpsmen	15 mo.	25, 14 grad	May, 1969

II. PHYSICIAN'S ASSISTANT PROGRAMS

A. ACTIVE Cont'

Title of Graduate	Certificate or Degree	Director	Institution	Prerequisites	Length and cost of course	No. of Students	Stage of Development
WEST VIRGINIA							
Philippi							
Physician's Assistants (97, 98, 99, 3, 8, 121, 138)	Bacc. in Medical Sci.	Hu C. Myers, M.D.	Alderson-Broaddus College, Broaddus Hosp. Philippi, W. Va.	H.S. diploma	4 yr.	42	Operational 1968
WISCONSIN							
Marshfield							
Physician's Assistant Surgery (8, 121, 138)		Ben Lawton, M.D.	Marshfield Clinic Marshfield, Wisc.	Medical-surgical corpsmen	1 yr.	1	2 yrs.

II. PHYSICIAN'S ASSISTANT PROGRAMS

B. PLANNED OR

INCOMPLETE INFORMATION

Title of Graduate	Director	Institution
CALIFORNIA		
Los Altos Hills		
Pediatric Assistant (3, 8, 121, 138)	Nathan Boortz, M.D.	Foothill College District De Anza College Campus 12345 El Monte Road Los Altos Hills, California 94022
DISTRICT OF COLUMBIA		
Washington		
Physician Assistant (138)	Robt. L. Brutsche, M.D.	Federal Bureau of Prisons U.S. Dept. of Justice Washington, D.C. 20537
MICHIGAN		
Kalamazoo		
Physician's Assistant (121)	W. G. Birch, Sr., M.D.	Western Michigan University Kalamazoo, Mich. 49001
NEW HAMPSHIRE		
Hanover		
Medex (121)	Bella Strauss, M.D.	Dartmouth Medical School Hanover, N.H. 03755
OKLAHOMA		
Stillwater		
Physician's Assistant (8)	John Shearer, M.D.	College of Business Education Oklahoma State University Stillwater, Oklahoma 74074

III. COMMUNITY HEALTH AIDE PROGRAMS

Title of Graduate	Director	Institution
ALASKA		
Community Health Aide (138)	John Lee, M.D.	Indian Health Alaska
CALIFORNIA		
Contra Costa		
Community Health Aide (23, 91)		Contra Costa Project
King City		
Home Health Care Aide (19, 20, 21)		Southern Monterey County Medical Group 210 Canal Street King City, Calif. 93930
Los Angeles		
Neighborhood Health agent	R. E. Tranquada	South Central Multipurpose Health Center Los Angeles, Calif. (Watts)
COLORADO		
Denver		
Screening Aide (3)	W.K. Frankenburg, M.D.	University of Colorado School of Medicine 4200 E. Ninth Ave. Denver, Colorado 80220
ILLINOIS		
Chicago		
Community Health Aide (109)	A.L. Pisani, M.D.	St. Luke's Hospital Chicago, Illinois

Title of Graduate	Director	Institution
INDIANA		
Indianapolis		
Screening Technicians (138)	R.B. Stonehill, M.D.	Flanner House of Indiana Indianapolis, Indiana
MARYLAND		
Baltimore		
Screening Technicians (138)	W.S. Spicer, Jr., M.D.	Community Pediatric Center University of Maryland Baltimore, Maryland
MASSACHUSETTS		
Boston		
Community Health Aide (76, 138)	Barnett Alder	Columbia Health Center Boston, Massachusetts
MISSISSIPPI		
Mound Bayou		
Community Organizers (74, 75)	John Hatch	Tufts-Delta Health Center Mound Bayou, Mississippi
NEW JERSEY		
Community Health Worker (86)		Northeast Neighborhood Association Medical Center Jersey City, N.J. 07306
NEW YORK		
Bronx		
Patient Care Expediter (90, 146, 121)	Bertrand Bell, M.D.	Albert Einstein College of Medicine The Bronx, N.Y. 10461
Family Health Worker	Harold Wise, M.D.	Martin Luther King Jr. Health Center and Montefiore Hospital The Bronx, N.Y.

Title of Graduate	Director	Institution
NEW YORK		
Bronx		
Community Health Advocate	Harriet Bograd	Community Health Advocacy Department 400 E. 169th St. Bronx, N.Y.
OHIO		
Cleveland		
Family Health Care Worker	J.A. Turner	Hough Norwood Community Health Care Center Cleveland, Ohio
Medical Assistant		
Dental Assistant	A. H. Schneiderman, DDS	
OREGON		
Portland		
Community Health Aide	Ernest Saward, M.D.	Permanente Clinic Portland, Oregon
WASHINGTON D.C.		
Community Health Representative (138)	Richard Urich, M.D.	Indian Health Service Washington, D.C.

BIBLIOGRAPHY

1. Abdellah, F. G., Patient Centered Approaches to Nursing, New York, Macmillan, 1960

2. Aller, J. D., Kirk, R. F. H., and Browne, H. E., Delivery of medical care by family nurse practitioners in eastern Kentucky, Paper presented to American Public Health Association, November 11, 1969 (University of Kentucky College of Medicine, Lexington, Kentucky)

3. American Academy of Pediatrics, Council on Pediatric Practice, Directory of current programs for the training of pediatric nurse associates, assistants and aides (undated) 1801 Hinman Ave., Evanston, Ill. 60204

4. American Academy of Pediatrics, Suggested essential guidelines for the training of pediatric nurse associates, Career Development Issues 1:3, March 1970, National Institute for New Careers, 4301 Connecticut Ave., N.W., Washington, D. C. 20008

5. American Associate of Physicians' Assistants, Newsletter, Box 2951, W. Durham Station, Durham, N. C.

6. American Medical Association, Committee on Health Care of the Poor, A report on health care of the poor; program and policies, AMA, 535 North Dearborn St., Chicago, Ill. 60610, December, 1969

7. American Medical Association, Council on Health Manpower, Licensure of Health Occupations, adopted by the house of delegates December, 1970

8. American Medical Association, Council on Health Manpower, Operational Physician's Assistant Projects, April 1970, American Medical Association, 535 N. Dearborn Street, Chicago, Ill. 60610

9. American Medical Association, Council on Health Manpower, The Child Health Associates, a new training program in Colorado, J.A.M.A. 212: 1045-1046, 1970 (May 11)

10. American Medical Association, Council on Medical Education. Educational programs in areas allied with medicine, J.A.M.A. 214: 1483-1549, 1970

11. American Medical Association, Council on Medical Services, Health Care Delivery in Rural Areas, AMA, Chicago, Illinois, September, 1969

12. American Medical News, AMA urges major new role for nurses, Feb. 9, 1970

13. American Nurses' Association, Educational Preparation for Nurse Practitioners and Assistants to Nurses: A Position Paper, ANA, 10 Columbus Circle, N. Y., N. Y. 10019, 1965

14. American Nurses' Association, Facts About Nursing (1969 edition), A.N.A. 10 Columbus Circle, N. Y., N. Y., 10019

15. Anderson, K. H., The physician's assistant program at Bowman Gray, Bull. Ped. Practice, 4: 4- , 1970 (Mar.)

16. Anderson, K. H. and Power, L., The pediatrician's assistant, N. Carolina Medical Journal 31:1-8, (Jan.)

17. Andrews, P. M., Personal communication, Oct. 13, 1970

18. Andrews, P. M., Yankauer, A., and Connelly, J. P., Changing the patterns of pediatric caretaking. An action-oriented training program for nurses, Am. J. Pub. Health 60: 870-879, 1970 (May).

19. Andrus, L. H., Home care for the rural poor, Hospitals 44: 43-48, 1970 (Mar.)

20. Andrus, L. H., Paramedical personnel and private practitioners, Hospital Practice 3: 64-69, 1968

21. Andrus, L. H., The rural health program of southern Monterey County, Calif. Med. 108: 124-6, 1968

22. Anonymous, A training program for development of the family nurse practitioner, Front. Nurs. Serv. Quart. Bull. 45: 34-40, 1969 (summer)

23. Anonymous, Medicine in the ghetto, Pub. Health Rep. 85: 284, 1970 (Apr.)

24. Ariz Rev. Stat., sec 32-1421 (supp. 1969-70); Colo. Rev. Stat., sec 91-1-6(3)(m),(n), (1963); Kansas Stat., sec 65-2872(g)(1964); Okla Stat., tit. 59, sec 492 (supp. 1966)

25. Arnhoff, F. N. and Boneau, C. A., Manpower needs and resources for community psychology, in Golann S. and Eisdorfer, C. (eds.) Handbook of Community Psychology and Mental Health, Appleton-Century Crofts (to be published)

26. Avellar, E. C., Hams, A., Lewis, A. and Sheckler, C., The use of nurse obstetric assistants in a rural county hospital maternity and newborn program, Bureau of Maternal and Child Health, State of California, Department of Public Health, 1967

27. Barnes, A. C., The World Health Organization Report: Midwife in Maternity Care, Bull. Am. Coll. Nurse-Midwifery 12: 19-27, 1967

28. Basset, G. R., The Medex project: Questions and answers, Washington State Journal of Nursing Nov./Dec. 1969

29. Bates, B., Doctor and nurse: Changing roles and relations, N.E.J.M. 283: 3, 129-134, 1970 (July 16).

30. Beasley, W. B. R., Extension of medical services through nurse assistants, J. Kentucky Med. Ass'n. 67: 101-106, 196[illegible]

31. Beasley, W. B. R., The nurse-midwife as a mediator of contraception, Am. J. Obstet and Gyn. 98: 201-207, 1967

32. Beasley, W. B. R., Fox, M. P., Long, P. and Sandberg, N., Family planning by nurse midwives in a rural area, J. Obstet. and Gyn of India 18: 1-5, 1968.

33. Booz-Allen and Hamilton, Family Nurse Practitioners in Kentucky, Booz-Allen & Hamilton, Management Consultants, Chicago, Illinois, 1969

34. Breeland, W. H., North Carolina's approach to expanded duties for auxiliaries, J. Alabama Dental Ass'n 51: 42-46, 1967

35. Breytspaak, L. M. and Pondy, L. R. Z., Sociological evaluation of the physician's assistant's role relations, Group Practice 18: 32-41, 1969

36. Brown, E. L., Nursing Reconsidered: A Study of Change (Part I), Philadelphia, J. P. Lippincott, 1970

37. Bulletin of the American College of Nurse-Midwifery, Nurse-midwifery status, 14: 70-75, 1969

38. Bulletin of Duke University, Physician's Assistant Program 1970-71, Duke University, Durham, N.C., 27706

39. Bunker Hill Health Center of the Massachusetts General Hospital, Progress Report, Pediatric Nurse Practitioner Program, September 1969 - April 1970 (mimeographed)

40. Calif. Stat., sec. 2377.5 (1970)

41. Cauffman, J. G. Wingert, W. A., Friedman, D. B., Warburton, E. A. and Hanes, B., Community Health Aides; How effective are they? Am. J. Pub. Health, 60: 1904-1909, 1970 (Oct.)

42. Charney, E., Nurse clinicians in private pediatric practice and neighborhood health centers, in The Training and Utilization of Pediatric Assistants: Report of a Macy Conference, December 1969, Josiah Macy, Jr., Foundation, N.Y., pp. 52-57

43. Child Health Associate Act, Colorado State Legislature, enacted 1969

44. Citizens Commission on Graduate Medical Education, The Graduate Education of Physicians (Millis Report), American Medical Association, 535 North Dearborn Street, Chicago, Ill. 60610, Aug. 1966

45. Cleveland Clinic Hospital, The Clinical Corpsman Training Program, 2050 E. 93rd St., Cleveland, Ohio 44106, July, 1970 (mimeographed)

46. Coggeshall, L. T., Planning for Medical Progress Through Education, Association of American Medical Colleges, One Dupont Circle, Washington D. C., 20036, April 1965.

47. Connelly, J. P., Use of ancillary personnel in children's outpatient department, Clinical Pediatrics, 4: 233-236, 1965.

48. Connelly, J. P., Stoeckle, J. D., Lepper, E. S. and Farrisey, R. M., The physician and nurse-their interprofessional work in office and hospital ambulatory settings, N. E. J. Med. 275: 765-769, 1966

49. Connelly, J. P. and Yankauer, A., Allied health personnel in child health care, Ped. Clin. N. A. 16: 921, 1969

50. Connelly, J. P., and Yankauer A., Health Manpower , the problem and the national scene, Clinical Ped. 7: 245, 1968

51. Conway, B. J., Legal aspects of expanded duties for dental auxiliary personnel, The Dental Assistant, August, 1969, pp. 10-11

52. Cowen, D. L., Denver's neighborhood health program, Public Health Rep., 84: 1027-1031, 1969

53. Cowne, L. J., Case studies of volunteer programs in mental health, Mental Hygiene 54: 337-346, 1970

54. Criscione, J. V., Kaiser's group practice is currently serving 1.7 million Californians, California's Health, October, 1969, pp 6-8

55. Curran, W. J., New paramedical personnel-to license or not to license, N.E.J.M. 282: 1085-1086, 1970 (May 7)

56. Day, L. E., Egli, R. and Silver, H. K., Acceptance of pediatric nurse practitioners, Am. J. Dis. Child., 119: 204-208, 1970

57. DeGarmo, H., Letter describing pediatric practice with nurse associates, Bulletin of Pediatric Practice 4: 2 June, 1970

58. Dental Assistant, "What is your opinion of extended responsibilities for dental assistants?" August, 1969, pp. 12-18

59. Derbyshire, R. C., Medical Licensure and Discipline in the United States, Baltimore Maryland, The Johns Hopkins Press, 1969

60. Deuschle, K., Training and use of medical auxiliaries in a Navajo community, Pub. Health Rep. 78: 461-469, 1963

61. Dilworth, A. S., Joint preparation for clinical nurse specialists, Nursing Outlook 18: 22-25, 1970 (Sept.)

62. Drucker, P. F., Work and worker in the metropolis, Daedalus 97: 1243-1262, 1968 (Fall).

63. Duke University, Department of Community Health Sciences, Model Legislation Project for Physician's Associates, Durham, N.C., June 30, 1970

64. Duncan, B., Smith, A. N. & Silver, H. K., Comparison of the physical assessment of children by pediatric nurse practitioners and pediatricians, University of Colorado Medical Center, Denver, Colorado, 1970 (unpublished)

65. Estes, E. H., Jr., The training of physician's assistants; a new challenge for medical education, Modern Medicine, June 29, 1970, pp. 90-93

66. Estes, E. H., Jr., and Howard, D. R., Potential for newer classes of personnel: Experience of the Duke physician's assistant program, J. Med. Educ. 45: 149-155, 1970

67. Fakkema, L., Primary health care for children and their families in California, paper prepared for Annual Meeting of American Public Health Association Nov. 10, 1969

68. Farrisey, R. M., The use of pediatric nurse-practitioners in hospital outpatient departments and health centers, Macy Conference, Williamsburg, Virginia, Dec. 10-12, 1969, pp. 59-71

69. Ford, A. B., Liske, R. E., Ort, R. S. and Denton, J. C., The Doctor's Perspective, Cleveland, Ohio, The Press of Case Western Reserve University, 1967, pp. 146-149, 155

70. Ford, L. C., The future in child care, Harriet Cook Carter Lecture, presented at Duke University School of Nursing, April 9, 1970

71. Frank, D. J., Geisel, R. G., and Chaney, P., The Pediatric Nurse Associate Program, The Good Samaritan Hospital, Cincinnati, Ohio 45220, January, 1970 (mimeographed)

72. Fry, J., Profiles of Disease, E & S Livingstone, Edinburgh, 1966

73. Gardner, M.S., Public Health Nursing, New York, The Macmillan Co., (3rd Ed. Rev.) 1938, pp. 24-36

74. Geiger, H. J., Health center in Mississippi, Hospital Practice 4: 68-81, 1969

75. Geiger, H. J., The neighborhood health center, Arch. Environ. Health 14: 912-916, 1967

76. Gibson, C., The neighborhood health center: The primary unit of health care, Am. J. Pub. Health 58: 1188-1191, 1968

77. Good Samaritan Hospital, Department of Pediatrics, The pediatric nurse associate program, (Mrs.) Pat Chaney, RN, Nursing Coordinator, Pediatric Nurse Associate Program, Good Samaritan Hospital, 1970 (Jan.) (mimeographed) Cincinnati, Ohio 45220

78. Greenberg, S. B., Curriculum development and training for community health workers, Comprehensive Health Services Career Development Technical Assistance Bulletin, May 1970, National Institute for New Careers, University Research Corporation, 4301 Connecticut Ave., N. W. Washingtion, D. C. 20008

79. Group Health Cooperative of Puget Sound, Parent's opinions of group health Medex services, GHC Research Note #5, July 27, 1970 (Mimeographed)

80. Hammons, P., Recent research in auxiliary utilization, J. Alabama Dental Ass'n 51: 33-41. 1967

81. Hellman, L. M., Yankauer, A., Jones, S. H., Feldman, J. J., and Kosa, J., Use of health manpower in obstetric-gynecologic care in the U.S., Int'l. J. Gyn & Obs. 8 (5, part 2): 732-738, 1970 (Sept.)

82. Hershey, N., Inhibiting effect upon innovation of the prevailing licensure system, Federation Bulletin (Federation of State Medical Boards Medford, Oregon) 57: 165-180, June, 1970; see also Hershey, N. An alternative to mandatory licensure of health professionals, Hospital Progress, March, 1969

83. Howard, D. R. and Fraser, E. C., Duke University's physician assistant program, Hospital Progress 51: 48-55, 1970 (Feb.)

84. Institute for Interdisciplinary Studies, American Rehabilitation Foundation, The Law and Health Personnel: A Study of Minnesota Law, Comprehensive Health Planning Program, 603 Capitol Square Building, St. Paul, Minnesota 55101, April 1970.

85. Kim, M., New Patterns of Health Care: The Physician's Assistant, Legislative Reference Bureau, University of Hawaii, Honolulu, Hawaii, 96822, Jan., 1970

86. Knopf, L., A community gets a health center, A.J. Nursing 70: 1498, 1970 (July)

87. Kramer, J., Health care: fund shortage impedes training of medical aids, Science 169: 956-960, 1970

88. Lashof, J. C., Chicago Project provides health care and career opportunities, Hospitals 43: 105-108, July 1, 1969

89. Lewis, C. E., Nurse clinics and progressive ambulatory patient care, N.E.J.M. 277: 1236-1241, 1967

90. Lloyd, W., Training and use of members of the community that is served by the center, Bull. N.Y. Acad. Med., 45: 1357-1359, 1969

91. Luckham, J., and Swift, D., Community Health Aides in the Ghetto: The Contra Costa project, Med. Care 7: 332-339, 1969

92. McKeown, T. and Lowe, C. R., An Introduction to Social Medicine, Oxford, Blackwell Scientific Publications, 1966, p. 316

93. Matarazzo, J. D., A national mental health manpower showcase conference; NAMH leads the way, Mental Hygiene 54: 333-336, 1970 (July)

94. MEDEX: A demonstration program to extend the physician's capacity, Medex Communication Center, 444 Northeast Ravenna Boulevard, Seattle, Washington 98115, 1970

95. Mereness, D. A., Recent trends in expanding roles of the nurse in Challenge to Nursing Education: Clinical Roles of the Professional Nurse, National League for Nursing, Publication No. 15-1404, 1970 pp. 41-47

96. Moser, R. H., Disease of Medical Progress: A Study of Iatrogenic Disease, Springfield, Illinois, Charles C. Thomes, 1969 (3rd Ed.)

97. Myers, H. C., A new educational program for physicians' assistants, Medical Times 97: 140-144, 1969

98. Myers, H. C., The physician's assistant, W. Va. Med. J. 65: 303-304, 1969

99. Myers, H. C. The physician's assistant in community hospital and office practice, Ann, N.Y., Acad. Sci. 166: 911-915, 1969

100. National Academy of Sciences, Allied Health Personnel: A Report on Their Use in the Military Services as a Model for Use in Non-military Health-care Programs, National Academy of Sciences, Washington, D. C., 1969

101. National Association for Mental Health, Statement on Manpower (undated)

102. National League for Nursing, Council of Baccalaureate and Higher Degree Programs, Resolution, March 13, 1970

103. Occhionero, R. L., Dental auxiliary utilization program, Case Western Reserve University School of Dentistry, February, 1970 (mimeographed)

104. Ohio Revised Code, Chapter 4723

105. Pellegrino, E. D., The generalist function in medicine, J.A.M.A. 198: 541-545, 1966

106. Pennell, M. Y. & Hoover, D. B., Health Manpower Source Book 21: Allied Health Manpower Supply and Requirements: 1950-80, Public Health Service Publication No. 263, U.S. Government Printing Office, Washington D. C. 20402, 1970

107. Peterson, O. L., Burgess, A. M., Jr., Berfenstam, R., Smedby, B., Logan, R. L. F. and Pearson, R. J. C., What is value for money in medical care? Lancet 1: 771-776, 1967

108. Petrek, J. and Chan, D., Survey of obstetrician-gynecologists in California, 1970 (unpublished), Miss Petrek is a medical student at Case Western Reserve University and Mr. Chan at the University of Southern California

109. Pisani,A.L.,Child health care in the inner city: the neighborhood health center approach, Bull. Ped. Pract 3: 1278, 1969 (Dec.)

110. Pisani,A.L.,The Pediatric Assistant: Creation of a new role for today's child health care crisis, Pres. St. Lukes Hosp. Med. Bull. 9:15-18, 1970 (Jan.)

111. Points, T. C., Guidelines for development of new health occupations, J.A.M.A. 213: 1169-1171, 1970 (Aug. 17).

112. Polk, L. D., M.D., Deputy Commissioner for Community Health Services, 500 South Broad Street, Philadelphia, Penna. 19146, personal communication, Oct. 8, 1970

113. Pondy, L. R., Dampier, B. H., Rice, T. R., and Knaop, A., A study of patient acceptance of the physician's assistant, Durham, N. C., February, 1970 (unpublished)

114. Pounds, L. A., The physician's assistant program at Duke University, Bull. of Pediatric Practice, 4: 2-3, 1970 (March)

115. Powell, R. N., MEDEX, a breakthrough in medicine, Hospital Tribune 9/21/70

116. Powers, L. and Howard, R., The feasibility of an assistant to the physician, North Carolina Medical Journal 31: 79-83, 1970 (March)

117. Prosser, W. L. Handbook of the Law of Torts, St. Paul, Minn., West Publishing Co., 3rd Ed. (1964) pp.142-143, 146-148

118. Reuther, W., The health care crisis: Where do we go from here? Am. J. Public Health 59: 12- 1969

119. Riddick, F. A., Bryan, J. B., Costello, A. C. and Gershenson, M. I., Use of allied health professionals in internists offices - Current practices and physicians' attitudes, Am. Society of Internal Medicine, 1970 (unpublished)

120. Riley, G. J., Wille, C. R., and Haggerty, R. J., A study of family medicine in upstate New York, J.A.M.A. 208: 2307-2314, 1969

121. RN, The physician's assistant programs, RN 33: 43-46, 1970 (October)

122. Sanazaro, P. J., The R & D approach to health manpower in the 1970's, paper presented at Conference on Physician Support Personnel, American Medical Association, Chicago, Illinois, March 19, 1970 (author is Director, National Center for Health Services Research and Development, 5600 Fishers Lane, Rockville, Maryland 20852).

123. Schiff, D. W., Fraser, C. H., and Walters, H. L., The pediatric nurse practitioner in the office of pediatricians in private practice, Pediatrics 44: 62-68, 1969

124. Schorr, L. B. and English, J. T., Background, context and significant issues in neighborhood health center programs, Milbank Mem. Fund Quart. 46: 289-296, 1968

125. Shannon, I. R., More nursing per square mile, Nurs. Outlook 18: 42-44, 1970 (April)

126. Sills, G. Director of Nurse Clinician Program in Psychiatric Nursing, Ohio State University School of Nursing, Columbus, Ohio, personal communication.

127. Silver, H. K. Personal communication, Aug. 7, 1970.

128. Silver, H. K., The pediatric nurse practitioner and the child health associate - new types of health professionals, Ann, N.Y. Acad. Sci. 166 :927-933, 1969

129. Silver, H. K., Ford, L. C., and Day, L. R., The pediatric nurse practitioner program: Expanding the role of the nurse to provide increased health care for children, J.A.M.A. 204: 298-302, 1968

130. Silver, H. K., and Hecker, J.A., The child health associate, University of Colorado trains a new type of health professional, Hospitals, J.A.H.A. 44, Oct. 16, 1970

131. Silver, H.K. and Hecker, J.A., The pediatric nurse practitioner and the child health associate: New types of health professionals, J. Med. Educ. 45: 171-176, 1970 (March)

132. Smith, R. A., MEDEX - A demonstration program in primary medical care Northwest Med. 68: 1023-1030, 1969

133. Stead, E. A., Jr., Training and use of paramedical personnel, N.E.J.M., 277: 800-801, 1967

134. Stoeckle, J.D. and Connelly, J. P., The Nurse Clinician, Book to be published.

135. Strauss, M.B., The unsolved problem: Obtaining personal health care, N.E.J.M., 279: 831-833, 1968

136. Subcommittee on Health of the Committee on Labor and Public Welfare, United States Senate, on S. 3418, Family Practice of Medicine, July 8 and 9, 1970, U.S. Government Printing Office, Washington, D.C., 1970

137. U. S. Department of Health, Education, and Welfare, Bureau of Health Professions Education and Manpower Training, Health Manpower Source Book, Section 20, Public Health Service Publication No. 263, U.S. Government Printing Office, 1969

138. U. S. Department of Health, Education and Welfare, Council on Health Manpower, Selected Training Programs for Physician Support Personnel, June 1970, National Institutes of Health, Public Health Service, Department of Health, Education and Welfare, Bethesda, Maryland 20014

139. U.S. Department of Health, Education, and Welfare, Division of Health Manpower, Division of Dental Health, Objectives and Guidelines for the TEAM Program, 9000 Rockville Pike, Bethesda, Maryland 20014, June, 1970 (mimeographed).

140. U. S. Department of Health, Education, and Welfare, Human Investment Programs, Delivery of Health Services for the Poor, U. S. Government Printing Office, Washington, D. C. 20402, December, 1967.

141. University of California, School of Public Health, Family Nurse Practitioner Program, Jean C. French, Director, School of Public Health, Berkeley, California, 1970 (mimeographed).

142. University of Colorado Medical Center, School Nurse Practitioner Program (brochure), July, 1970

143. University of Colorado Medical Center, The pediatric nurse practitioner program, 1970, (mimeographed)

144. White, K. L., Organization and delivery of personal health services, Milbank Mem. Fund Quart. 46: 225-258 (No. 1, Part 2) 1968

145. White, K. L., Patterns of medical practice, in Clark, D. W., and MacMahon, B. (eds.) Preventive Medicine, London, J. A., Churchill Ltd., 1967, pp. 849-870

146. Wise, H. B., Torrey, E. F., McDade, A., et al, The family health worker, Am. J. Pub. Health, 58: 1828-1838, 1968

147. Yankauer, A., Connelly, J. P. and Feldman, J. J., A survey of allied health worker utilization in Massachusetts and in the United States, Pediatrics 42: 733, 1968

148. Yankauer, A., Connelly, J. P. and Feldman, J. J., Pediatric practice in the United States, Pediatrics 45: 521-554, 1970 (March, Suppl.).

149. Yankauer, A. Connelly, J. P., and Feldman, J. J., Physician productivity in the delivery of ambulatory care, Medical Care 8: 35-46, 1970 (Jan-Feb.).

150. Yankauer, A., Connelly, J. P. and Feldman, J. J., Task performance and task delegation in pediatric office practice, Am. J. Pub. Health 59: 1104, 1969.

151. Yankauer, A. and Duiker, W. J., Telephone survey of pediatric nurse practitioner training programs, American Academy of Pediatrics, Evanston, Illinois, June, 1970 (unpublished).

SUPPLEMENT FOR THE STATE OF OHIO

Ohio is a typical northern industrial state, and the state and its large cities fall close to the national average in terms of health resources and manpower (161). Its per capita expenditures for hospitals, health, public welfare, and education, however, rank among the lowest in the nation (170). Ohio probably has an average amount of ferment, innovation, and need for new approaches to the delivery of primary care. A closer examination of what is going on in this state shows it to be a microcosm of the country as a whole, but it also brings out the fact that Ohio has at present less financial and administrative support to offer those who are striving to improve health services, than do other states which are comparable in size and wealth.

This supplement will identify existing programs in the state and suggest ways in which a stronger state program might be achieved. The authors have attempted to gather information on current activities in the state, but they recognize that this description is not complete. In some respects, such as the Free Clinic movement, for example, the situation may change greatly over a few weeks or months.

Existing Programs

Nurse clinicians (master's degree) are being prepared at the nursing schools of Ohio State University, Columbus (168), and Case Western Reserve University, Cleveland (154). In Columbus, psychiatric nurse clinicians are trained in community primary care settings. In Cleveland, the nursing

school has combined responsibility for education and service in University Hospitals (169). As part of a 5-year "Experiment in Nursing," nurse clinicians, of whom some 25 have been trained in the past 5 years, have initiated nurse-operated programs in the out-patient department for such primary care services as prenatal care and the treatment of obesity. Graduates of this program have also moved out into employment in such settings as a private pediatric office, the local Visiting Nurse Association, and the city health department.

Nurse practitioners are being trained in the "Pediatric Nurse Associate Program" in Cincinnati, sponsored by the University of Cincinnati and the Good Samaritan Hospital. Funding is by federal money, distributed through the Maternal and Child Health Division of the Ohio Department of Health. This program is one of the first in the country, and some details are given in the present report (pp. 9-14, and Appendix, p. 49). A new program, similar in plan and financial support, is scheduled to begin in March, 1971, based at Cleveland Metropolitan General Hospital (159). Experimental programs in training nurses to provide triage services in the emergency room and health maintenance in the medical outpatient department are also being developed at that hospital.

Nurse-midwives, in small numbers, are providing part or all of the obstetrical care for normal pregnancies at hospitals in Springfield, Cincinnati, and Cleveland (158). No training program exists in the state at the present time, and the nurse-midwives now practicing in Ohio have been trained in other states or in England.

Physicians' Assistants have been trained at the Cleveland Clinic Hospital since 1968 (157). The Clinical Corpsman Training Program admits experienced military corpsmen, and classroom work is done at Cuyahoga Community College and at the Clinic. The emphasis so far has been on the preparation of technically skilled assistants for surgical and other hospital-based specialties, and most graduates have been employed in the sponsoring institution.

A new program is being launched in 1971 at Case Western Reserve University leading to a Bachelor of Science degree in Health Science (156). The initial program is built around a major in anesthesiology. A combination of undergraduate course work and on-the-job training in clinical anesthesiology will lead to a certificate at the 2-year level (anesthesia assistant) or at the 4-year level (anesthesia associate). The full course of study also meets pre-medical requirements. Thirty-five students are enrolled. This program is in some ways comparable to the Alderson-Broaddus program (Appendix, p. 57), which is also at the baccalaureate level. As a pilot program, it will develop a core science curriculum which could permit branching into other specialties, including those concerned with primary care. At present it is not directed at meeting the need for primary care.

Medical Assistants of many kinds are trained throughout the state. Forty-five hospitals have programs for medical technologists, 77 for radiologic technologists, 14 for certified laboratory assistants, 11 for cytotechnologists, 2 each for physical therapists and inhalation therapy technicians, and 1 for occupational therapists (152). The School of Allied Medical Professions

at Ohio State University in Columbus offers 10 programs, one leading to a master's degree, one, a certificate, and the rest baccalaureate programs (167). Most of the programs prepare workers for specialized fields, such as occupational and physical therapy, dietetics, and the like, and none are now specifically directed at primary care. There are also less highly developed baccalaureate programs in various fields of allied medical technology at 10 or 11 other Ohio colleges or universities. Cuyahoga Community College, Cleveland, is one of 5 junior colleges in the country offering programs, such as medical or surgical assistant, approved by the new American Association of Medical Assistants (160).

Dental Assistants are involved in the education of dental students at Case Western Reserve University, Cleveland (155), but the number of programs training dental assistants in the state is small, in part because the state licensure laws are restrictive. Active efforts are being made to revise the law.

Community Health Aides. The most highly developed training program for community health aides in the state is at the Hough-Norwood Family Health Care Center, the Office of Economic Opportunity neighborhood health center in Cleveland (163). During the past 3 years more than 120 persons from the community have taken advantage of 20 per cent released time for formal study at Cuyahoga Community College in order to improve their skills in many kinds of jobs at the Center, including clerical, administrative and medical assisting work. The program provides employment and career development as well, and graduates will probably receive certificates in the future.

Many other organizations in Ohio are making use of untrained or on-the-job trained persons for the delivery of health services. The Medical Foundation of Bellaire, for example, has 18 "visiting health aides" who participate in follow-up care. "Free clinics" in Cleveland and Cincinnati are largely staffed by students and other non-professional volunteers who assist volunteer medical and nursing personnel. These clinics began with the treatment of drug addiction, but have gone on to provide broader types of primary health care. On the near west side of Cleveland a voluntary clinic has recently been organized by local residents, in collaboration with Lutheran Hospital, using community health "advocates." A newly-formed Cleveland group, Community Action Against Addiction, coordinates program in which ex-addicts and other indigenous workers provide counselling and medical assistance in the treatment of narcotics addicts. A novel program at Wittenberg University, Springfield, enlists theology students as "clergy-medics" to work with doctors and nurses to provide care at a drop-in clinic located in a church.

No attempt has been made to canvass the numerous local and community mental health programs in the state, but this is recognized as another large area of experimentation and broadening of the health manpower base.

Official Support and Financing

The Ohio chapters of the American Medical Association and the American Hospital Association have shown interest in these new developments by appointing committees, holding a conference on physicians' assistants, and endorsing the call by the national organizations for a moratorium on new licensure laws (pp. 33-37).

The Ohio Board of Regents released a report in December, 1970, entitled "Master Plan for State Policy in Higher Education, 1971" which reviews the present status of programs in health (and other) education in more detail than is possible here (164). In general, the report encourages and recommends support for medical education, for nursing education at all levels, for dental education, and for allied medical technical education. It also calls for consideration of "health education centers," as proposed in the Carnegie Commission Report (153), and possibly two new medical schools in the state.

State-wide and local units of the Comprehensive Health Planning and Regional Medical Programs list improved delivery of primary care to economically deprived urban and rural areas of the state among their highest priorities (165, 166). Such diverse activities as the commissioning of the present report, the planning of community health networks, and financing of individual projects may be expected to give indirect support to the participation of non-physician health workers in primary care.

One such project has been the development of an agency for encouraging young people to consider careers in the health field and for directing those interested to appropriate programs. Health Careers of Ohio (162), started in September, 1970, operates an information center and conducts a publicity program. It has been designated as the state agency for "Operation MEDIHC" (Military Experience Directed into Health Careers), a federal program for the guidance of discharged military medical corpsmen.

The most specific financial support for new health workers in Ohio has come from federal sources. Such funds, distributed through the State Maternal

and Child Health Division, have supported the Pediatric Nurse Associate Program in Cincinnati and will be used for the new nurse practitioner training program in Cleveland. The Office of Economic Opportunity has funded the development and training of community health workers at the Hough Norwood Clinic.

Individual educational and health service institutions have funded their programs with a mixture of private and public funds. Very little if any money from state or local taxes has been directed specifically to the development of new health manpower, and the authors have not identified any major support from private foundations in the state.

Licensing and Registration

The Ohio Statutes regulating the practice of medicine impose no serious limitation on the delegation of responsibility by physicians to nurses or other types of assistant, although they do not specifically authorize this. The Nursing Practice Act prohibits "acts of medical diagnosis or prescription of medical, therapeutic, or corrective medical measures by a nurse," but does not define these terms. The laws pertaining to dental hygienists and assistants are more specific and restrictive, and efforts are being made to liberalize them. Each of the professional organizations is reexamining licensure and registration problems in the state. The issues are national, and not specific for Ohio (pp. 33-39). The proposal for a moratorium on new legislation pending more thorough study of these broad questions seems appropriate.

Possibilities for Ohio

The findings of this study suggest a number of possible courses of action

for the Manpower Subcommittee and the Ohio Comprehensive Health Planning Council to consider.

1. Policy

The Council could explicitly state a policy of increasing and improving the delivery of primary care in Ohio by the increased use of new non-physician health workers. This policy is implicit in some state-level actions of the recent past, but more progress might result if it were enunciated as a specific goal. Development and expansion of programs would then become part of working out an agreed-upon objective rather than independent and fragmentary activities as they are at present.

2. Administration

The study demonstrates that states like California which have strong state health departments allied with educational institutions have been among the innovators and leaders in health care delivery. At the local level, cities like Rochester and Denver, which have been able to unify and strengthen county-wide health authorities have also made important contributions. A logical course of action would be for the Council to press for reforms which would streamline public health administration, attract new leadership at the state and local levels, and enable the health departments to perform studies and experiments in collaboration with the medical schools and other health educational institutions.

3. Financing

Given a more efficient public health administration with a more explicit and up-to-date charter, the state would then be in a position to use its own

funds and to distribute federal funds more effectively to improve the delivery of primary care to the many Ohioans who lack it now. Existing channels for federal financing, such as the Maternal and Infant Program and the Office of Economic Opportunity, have managed to deliver some funds to new training programs. The flow could be augmented and directed to additional areas of need by planning and coordination at the state level. If the legislature succeeds in increasing state income, this money could exert an important leverage on federal funds. The organization and delivery of primary health care to rural counties and to the sizeable migrant farm worker population in Ohio should rank high among the state's priorities.

The Council might be able to influence the allocation of funds by private foundations to the development and study of new health care delivery methods, although this is not a likely source of support for continued operation.

4. Education

Most of the developments described in this report have involved new training or educational programs. In Ohio, as in other states, difficulties arise from multiplicity and incoordination of programs. Although the Council is not the appropriate instrument for bringing about educational reform in the state, it can promote communication among existing programs and, most particularly, across professional barriers. Difficulties which the authors have encountered in assembling information about what is going on in Ohio have convinced them them a useful function could be served by bringing together nurses, doctors and others who are already active in the field. Decisions about where new programs should be developed, coordinated pleas for support, and better understanding by all those involved in new patterns of service are among the

benefits which could result from state-wide conferences and demonstrations.

Ohio does not have a physicians' assistant program directed at augmenting primary care, nor does it have a training program for nurse-midwives. There is need for more experimentation and careful evaluation of new health care delivery models, which must be conducted in conjunction with educational institutions. These and other innovations could be promoted by the Council's planning decisions.

5. Licensure and Registration

Reasons have been given for withholding any hurried action to extend licensure and registration by individual states, pending a thorough study of the problem at the national level. If any legislation seems to be needed in Ohio immediately, the authors believe that an amendment to the medical practice act specifically permitting physicians to delegate responsibility to trained associates should be considered. The Oklahoma statute has been cited as a model.

The future patterns of health services in the United States will probably be most strongly determined by federal legislation and expressed in organizational patterns at the metropolitan and county levels. A major question is whether the states will develop as significant intermediate administrative units in the health care system. Policy and planning decisions taken at the state level in Ohio in the immediate future can help to answer this question. This report has presented evidence of a nationwide movement toward more effective delivery of primary care through the efforts of new kinds of health worker. There are many opportunities to support and expand this movement in Ohio today.

SUPPLEMENTAL REFERENCES

152. American Medical Association, Council on Medical Education, Directory of Approved Allied Medical Educational Programs, 1971, 535 North Dearborn St., Chicago, Illinois 60610.

153. Carnegie Commission on Higher Education, Higher Education and the Nation's Health: Policies for Medical and Dental Education, McGraw Hill Book Company, Highstown, New Jersey, October, 1970.

154. Case Western Reserve University, Frances Payne Bolton School of Nursing, Bulletin, 1970-71, 2121 Abington Road, Cleveland, Ohio 44106

155. Case Western Reserve University, School of Dentistry, David B. Scott, D.D.S., Dean, 2123 Abington Road, Cleveland, Ohio 44106.

156. Case Western Reserve University, School of Medicine, Department of Anesthesiology, J. S. Gravenstein, M.D., Director, 2065 Adelbert Road, Cleveland, Ohio 44106.

157. Cleveland Clinic Hospital, Clinical Corpsmen Training Program, Donald G. Vidt, M.D., Medical Director, 2050 East 93rd St., Cleveland, Ohio 44106.

158. Cleveland Metropolitan General Hospital, Department of Obstetrics and Gynecology, A. Brian Little, M.D., Director, 3395 Scranton Road, Cleveland, Ohio 44109.

159. Cleveland Metropolitan General Hospital, Pediatric Nursing Program, Co-directors L. Clark Hansbarger, M.D. and Mary F. Sutton, R.N., M.P.H., 3395 Scranton Road, Cleveland, Ohio 44109.

160. Cuyahoga Community College, Technical-Occupational Education, Fred C. Sutton, Dean, 2900 Community College Ave., Cleveland, Ohio 44115.

161. Ford, A. B., Liske, R. E., Ort, R. S., and Denton, J. C., The Doctor's Perspective, Cleveland, Ohio, The Press of Case Western Reserve University, 1967, pp. 146-149, 155.

162. Health Careers of Ohio, Monica V. Brown, Director, P.O. Box 5574, 1480 West Lane Avenue, Columbus, Ohio 43221.

163. Hough-Norwood Family Health Care Center, David G. Miller, M.D., Medical Director, 1465 East 55th St., Cleveland, Ohio 44103.

164. Ohio Board of Regents, Ohio Master Plan for Public Policy in Higher Education, Board of Regents, Columbus, Ohio, March, 1971.

165. Ohio Comprehensive Health Planning Council, Miss Frances Williamson, Associate Chief, 450 East Town Street, Columbus, Ohio 43215.

166. Ohio State Regional Medical Program, William G. Pace, III, M.D., Coordinator, 1480 West Lane Avenue, Columbus, Ohio 43221.

167. Ohio State University, School of Allied Medical Professions, Robert J. Atwell, M.D., Director, 410 W. 10th Ave., Columbus, Ohio 43210.

168. Ohio State University, School of Nursing, Nurse Clinician Program in Psychiatric Nursing, G. Sills, Director, Columbus, Ohio.

169. Schlotfeldt, R. M. and MacPhail, J., An experiment in nursing, Am. J. Nursing, 69, Nos. 5, 6, and 7, 1969.

170. Weld, E. A., Jr. and Burke, J. F., Jr., A profile of state government expenditures for Ohio, 1969, Cleveland State University, Department of Economics, Working papers in economics, Number 29, 1970.